

SEQUENCE LISTING

<110> E. I. du Pont de Nemours and Company
 <120> Nucleic Acid Sequences Encoding Isoflavone Synthase
 <130> BB1339 PCT
 <140>
 <141>
 <150> 60/117,769
 <151> 1999-01-27
 <150> 60/144,783
 <151> 1999-07-20
 <150> 60/156,094
 <151> 1999-09-24
 <160> 66
 <170> Microsoft Office 97
 <210> 1
 <211> 1756
 <212> DNA
 <213> Glycine max

<400> 1
 gtaattaacc tcaactcaaac tcgggatcac agaaaccaac aacagttctt gcactgaggt 60
 ttcacgatgt tgctggaact tgcacttggt ttgttttgtt tagctttgtt tctgcacttg 120
 cgtcccacac caagtgc aaa atcaaaagca ctctgccacc tcccaaacc tccaagccca 180
 aagcctcgtc ttcccttcat tggccacctt cacctcttaa aagataaaact tctccactat 240
 gcactcatcg atctctccaa aaagcatggc cccttattct ctctctcctt cgggtccatg 300
 ccaaccgctg ttgcctccac ccctgagttg ttcaagctct tccctccaaac ccacgaggca 360
 acttccttca acacaagggt ccaaacctct gccataagac gcctcactta cgacaactct 420
 gtggccatgg ttccattcgg accttactgg aagttcgtga ggaagctcat catgaacgac 480
 cttctcaacg ccaccaccgt caacaagctc aggcctttga ggacccaaca gatccgcaag 540
 ttccttaggg ttatggccca aagcgcagag gccagaagc cccttgacgt caccgaggag 600
 cttctcaaat ggaccaacag caccatctcc atgatgatgc tcggcgaggc tgaggagatc 660
 agagacatcg ctgcgaggt tcttaagatc ttcggcgaat acagcctcac tgacttcatc 720
 tggcctttga agtatctcaa ggttggaag tatgagaaga ggattgatga catcttgaac 780
 aagttcgacc ctgtcgttga aagggtcatc aagaagcgcc gtgagatcgt cagaaggaga 840
 aagaacggag aagttgttga gggcgaggcc agcggcgtct tccctgacac tttgcttgaa 900
 ttcgctgagg acgagaccat ggagatcaaa attaccaagg agcaaatcaa gggccttggt 960
 gtcgactttt tctctgcagg gacagattcc acagcgggtg caacagagtg ggcattggca 1020
 gagctcatca acaatcccag ggtgttgcaa aaggtctgtg aggaggtcta cagtgttggt 1080
 ggcaaagata gactcgttga cgaagttgac actcaaaacc ttctttacat tagggccatt 1140
 gtgaaggaga cattccgaat gcaccaccca ctcccagtg tcaaaagaaa gtgcacagaa 1200
 gagtgtgaga ttaatgggta tgtgatccca gaggagcat tggttctttt caatgttttg 1260
 caagtaggaa gggaccccaa atactgggac agaccatcag aattccgtcc cgagagggtc 1320
 ttagaaactg gtgctgaagg ggaagcagg cctcttgatc ttaggggcca gcatttccaa 1380
 ctctcccat ttgggtctgg gaggagaatg tgccctgggt tcaatttggc tacttcagga 1440
 atggcaacac ttcttgcatc tcttatccaa tgctttgacc tgcaagtgtt gggccctcaa 1500
 ggacaaatat tgaaagggtg tgatgccaaa gttagcatgg aagagagagc tggcctcaca 1560
 gttccaaggg cacatagtct cgttttgtgt ccacttgcaa ggatcggcgt tgcattctaaa 1620
 ctctttctt aattaagata atcatcatat acaatagtag tgtcttgcca tcgcagttgc 1680
 tttttatgta ttcataatca tcatttcaat aaggtgtgac tgggtactta tcaagtaatt 1740
 aaggttacat acatgc 1756

<210> 2
 <211> 521
 <212> PRT
 <213> Glycine max

<400> 2

Met Leu Leu Glu Leu Ala Leu Gly Leu Phe Val Leu Ala Leu Phe Leu
 1 5 10 15
 His Leu Arg Pro Thr Pro Ser Ala Lys Ser Lys Ala Leu Arg His Leu
 20 25 30
 Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
 35 40 45
 His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
 50 55 60
 Lys Lys His Gly Pro Leu Phe Ser Leu Ser Phe Gly Ser Met Pro Thr
 65 70 75 80
 Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His
 85 90 95
 Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg
 100 105 110
 Leu Thr Tyr Asp Asn Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp
 115 120 125
 Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
 130 135 140
 Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu
 145 150 155 160
 Arg Val Met Ala Gln Ser Ala Glu Ala Gln Lys Pro Leu Asp Val Thr
 165 170 175
 Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu
 180 185 190
 Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
 195 200 205
 Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys Tyr Leu
 210 215 220
 Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
 225 230 235 240
 Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
 245 250 255
 Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Ala Ser Gly Val Phe
 260 265 270
 Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile Lys
 275 280 285
 Ile Thr Lys Glu Gln Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala
 290 295 300
 Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu
 305 310 315 320
 Ile Asn Asn Pro Arg Val Leu Gln Lys Ala Arg Glu Glu Val Tyr Ser
 325 330 335
 Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
 340 345 350

Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
 355 360 365

Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
 370 375 380

Tyr Val Ile Pro Glu Gly Ala Leu Val Leu Phe Asn Val Trp Gln Val
 385 390 395 400

Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
 405 410 415

Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Gly Pro Leu Asp Leu
 420 425 430

Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
 435 440 445

Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
 450 455 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
 465 470 475 480

Ile Leu Lys Gly Asp Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
 485 490 495

Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
 500 505 510

Ile Gly Val Ala Ser Lys Leu Leu Ser
 515 520

<210> 3
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Oligonucleotide

<400> 3
 cgggatccat gcaaccggaa accgtcg

27

<210> 4
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Oligonucleotide

<400> 4
 ccggaattct caccaaaccat cacggaggta tc

32

<210> 5
 <211> 47
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Oligonucleotide

<400> 5
 tcaaggagaa aaaaccccg atccatgttg ctggaacttg cacttgg

47

<210> 6
 <211> 35
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Oligonucleotide

<400> 6
 ggccagtga ttgtaatacg actcactata gggcg 35

<210> 7
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:PCR primer

<400> 7
 aaaattagcc tcacaaaagc aaag 24

<210> 8
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:PCR primer

<400> 8
 atataaggat tgatagttta tagtagg 27

<210> 9
 <211> 1824
 <212> DNA
 <213> Glycine max

<400> 9
 ggaaaaattag cctcacaaaa gcaaagatca aacaaaccaa ggacgagaac acgatgttgc 60
 ttgaaacttgc acttggttta ttggttttgg ctctgtttct gcacttgctt cccacaccca 120
 ctgcaaaatc aaaagcactt cgccatctcc caaaccaccc aagcccaaaag cctcgtcttc 180
 ccttcatagg acaccttcat ctcttaaaag acaaacttct cccactacgca ctcatcgacc 240
 tctccaaaaa acatgggtccc ttattctctc tctacttttg ctccatgcca accgttgttg 300
 cctccacacc agaattgttc aagctcttcc tccaaacgca cgaggcaact tccttcaaca 360
 caaggttcca aacctcagcc ataagacgcc tcacctatga tagctcagtg gccatgggtc 420
 ccttcggacc ttactggaag ttcgtgagga agctcatcat gaacgacctt cccaacgcca 480
 ccaactgtaa caagttgagg cctttgagga cccaacagac ccgcaagttc cttaggggta 540
 tggcccaagg cgagagggca cagaagcccc ttgacttgac cgaggagctt ctgaaatgga 600
 ccaacagcac catctccatg atgatgctcg gcgaggctga ggagatcaga gacatcgctc 660
 gcgaggttct taagatcttt ggcgaatata gcctcactga cttcatctgg ccattgaagc 720
 atctcaaggt tggaaagtat gagaagagga tcgacgacat cttgaacaag ttcgaccctg 780
 tcgttgaaag ggtcatcaag aagcgccgtg agatcgtgag gaggagaaag aacggagagg 840
 ttgttgaggg tgaggtcagc ggggttttcc ttgacacttt gcttgaattc gctgaggatg 900
 agaccatgga gatcaaaatc accaaggacc acatcgaggg tcttgttgtc gactttttct 960
 cggcaggaac agactccaca gcgttgcaa cagagtgggc attggcagaa ctcatcaaca 1020
 atcctaaggt gttggaaaag gctcgtgagg aggtctacag tgttgtggga aaggacagac 1080
 ttgtggacga agttgacact caaaaccttc cttacattag agcaatcgtg aaggagacat 1140
 tccgcatgca cccgccactc ccagtgttca aaagaaagtg cacagaagag tgtgagatta 1200
 atggatatgt gatcccagag ggagcattga ttctcttcaa tgtatggcaa gtaggaagag 1260
 accccaaaata ctgggacaga ccatcgaggt tccgtcctga gaggttccta gagacagggg 1320
 ctgaagggga agcagggcct ctgtatctta ggggacaaca ttttcaactt ctcccatttg 1380
 ggtctgggag gagaatgtgc cctggagtca atctggctac ttcgggaatg gcaacacttc 1440
 ttgcatctct tattcagtg cttgacttgc aagtgtctggg tccacaagga cagatattga 1500
 aggggtgtga cgccaaaagt agcatggaag agagagccgg cctcactgtt ccaagggcac 1560

atagtccttgt ctgtgttcca cttgcaagga tcggcgttgc atctaaactc ctttcttaat 1620
 taagatcatc atcatatata atatttactt tttgtgtgtt gataatcatc atttcaataa 1680
 ggtctcgttc atctactttt tatgaagtat ataagccctt ccatgcacat tgtatcatct 1740
 cccatttgc ttcgtttgct acctaaggca atcttttttt ttttagaatc acatcatcct 1800
 actataaact atcaatcctt atat 1824

<210> 10
 <211> 521
 <212> PRT
 <213> Glycine max

<400> 10

Met Leu Leu Glu Leu Ala Leu Gly Leu Leu Val Leu Ala Leu Phe Leu
 1 5 10 15
 His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg His Leu
 20 25 30
 Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
 35 40 45
 His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
 50 55 60
 Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr
 65 70 75 80
 Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His
 85 90 95
 Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg
 100 105 110
 Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp
 115 120 125
 Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Pro Asn Ala Thr Thr
 130 135 140
 Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Thr Arg Lys Phe Leu
 145 150 155 160
 Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr
 165 170 175
 Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu
 180 185 190
 Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
 195 200 205
 Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu
 210 215 220
 Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
 225 230 235 240
 Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
 245 250 255
 Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe
 260 265 270
 Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile Lys
 275 280 285

Ile Thr Lys Asp His Ile Glu Gly Leu Val Val Asp Phe Phe Ser Ala
 290 295 300
 Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu
 305 310 315 320
 Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser
 325 330 335
 Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
 340 345 350
 Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
 355 360 365
 Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
 370 375 380
 Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val
 385 390 395 400
 Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
 405 410 415
 Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Gly Pro Leu Asp Leu
 420 425 430
 Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
 435 440 445
 Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
 450 455 460
 Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
 465 470 475 480
 Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
 485 490 495
 Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
 500 505 510
 Ile Gly Val Ala Ser Lys Leu Leu Ser
 515 520

<210> 11
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:PCR primer

<400> 11
 atgttgctgg aacttgcaact t

21

<210> 12
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:PCR primer

<400> 12
 ttaagaaagg agttagatg caacg

25

<210> 13
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:PCR primer

<400> 13
 tgtttctgca cttgcgtccc ac

22

<210> 14
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:PCR primer

<400> 14
 ccgataccttg caagtggaaac ac

22

<210> 15
 <211> 1501
 <212> DNA
 <213> Medicago sativa

<400> 15
 tgtttctgca cttgcgtccc acaccaagtg caaaatcaaa agcacttcgc cacctcccaa 60
 accccccaag cccaaagcct cgtcttcctt tcattggcca ccttcacctc ttaaaagata 120
 aacttctcca ctatgcactc atcgatctct ccaaaaagca tggccctta ttctctctct 180
 ccttcgggtc catgccaaacc gtcgttgctt ccacctga gttgttcaag ctcttcctcc 240
 aaaccacga ggcaacttcc ttcaacacaa ggttcacaaac ctctgccaca agacgcctca 300
 cttacgacaa ctctgtggcc atggttccat tccgacctta ctggagggtc gtgaggagc 360
 tcatcatgaa cgaccttctc aacgccacca ccgtcaacaa gctcaggcct ttgaggaccc 420
 aacagatccg caagtctcctt agggttatgg cccaaagcgc agaggcccag aagccccttg 480
 acgtcaccga ggagcttctc aaatggacca acagcaccat ctccatgatg atgctcggcg 540
 aggtgagga gatcagagac atcgctcgcg aggttcttaa gatcttcggc gaatacagcc 600
 tcaactgactt catctggcct ttgaagtatc tcaagggttg aaagtatgag aagaggattg 660
 atgacatctt gaacaagtgc gaccctgtcg ttgaaagggt catcaagaag cgcctgagg 720
 tegtcaagaag gagagagaac ggagaagtgt ttgaggcgga ggccagcggc gtcttcctcg 780
 aacttttgct tgaattcgct gaggcgaga ccatggagat caaaattacc aaggagcaaa 840
 tcaagggcct tgttgtcgac cttttctctg caggacaga ttccacagcg gtggcaacag 900
 agtgggcatt ggcagagctc atcaacaatc ccagggtgtt gcaaaaggct cgtgaggagg 960
 tctacagtgt tgtgggcaaa gatagactcg ttgacgaagt tgacactcaa aaccttcctt 1020
 acattagggc cattgtgaag gagacattcc gaatgcaccc accactccca gtggtcaaaa 1080
 gaaagtgcac agaagagtgt gagattaatg ggtatgtgat cccagaggga gcattgggtc 1140
 ttttcaatgt ttggcaagta ggaagggacc ccaaatactg ggacagacca tccgaattcc 1200
 gtcccgagag gttcttagaa actggtgctg aaggggaagc agggcctctt gatcttaggg 1260
 gccagcattt ccaactcctc ccatttgggt ctgggaggag aatgtgccct ggtgtcaatt 1320
 tggctacttc aggaatggca acacttcttg catctcttat ccaatgcttt gacctgcaag 1380
 tgcgtggccc tcaaggacaa atattgaaag gtgatgatgc caaagttagc atggaagaga 1440
 gagctggcct cacagttcca agggcacata gtctcgtttg tgttcactt gcaaggatcg 1500
 g 1501

<210> 16
 <211> 499
 <212> PRT
 <213> Medicago sativa

<400> 16
 Phe Leu His Leu Arg Pro Thr Pro Ser Ala Lys Ser Lys Ala Leu Arg
 1 5 10 15

His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly
 20 25 30
 His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
 35 40 45
 Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Ser Phe Gly Ser Met
 50 55 60
 Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
 65 70 75 80
 Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Thr
 85 90 95
 Arg Arg Leu Thr Tyr Asp Asn Ser Val Ala Met Val Pro Phe Gly Pro
 100 105 110
 Tyr Trp Arg Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
 115 120 125
 Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
 130 135 140
 Phe Leu Arg Val Met Ala Gln Ser Ala Glu Ala Gln Lys Pro Leu Asp
 145 150 155 160
 Val Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
 165 170 175
 Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
 180 185 190
 Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
 195 200 205
 Tyr Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
 210 215 220
 Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Gly Ile
 225 230 235 240
 Val Arg Arg Arg Glu Asn Gly Glu Val Val Glu Gly Glu Ala Ser Gly
 245 250 255
 Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu
 260 265 270
 Ile Lys Ile Thr Lys Glu Gln Ile Lys Gly Leu Val Val Asp Leu Phe
 275 280 285
 Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
 290 295 300
 Glu Leu Ile Asn Asn Pro Arg Val Leu Gln Lys Ala Arg Glu Glu Val
 305 310 315 320
 Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
 325 330 335
 Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
 340 345 350
 Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile
 355 360 365

Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Val Leu Phe Asn Val Trp
 370 375 380

Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
 385 390 395 400

Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Gly Pro Leu
 405 410 415

Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
 420 425 430

Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu
 435 440 445

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
 450 455 460

Gly Gln Ile Leu Lys Gly Asp Asp Ala Lys Val Ser Met Glu Glu Arg
 465 470 475 480

Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
 485 490 495

Ala Arg Ile

<210> 17
 <211> 1501
 <212> DNA
 <213> Vicia villosa

<400> 17
 tgttttctgca cttgcgtccc acacccactg caaaatcaaa agcacttcgc catctcccaa 60
 acccaccaag cccaaagcct cgtcttccct tcataggaca ccttcattctc ttaaaagaca 120
 aacttctcca ctacgcactc atcgacctct ccaaaaaaca tgggtccctta ttctctctct 180
 actttggctc catgccaaacc gttgttgccct ccacaccaga attgttcaag ctcttctctcc 240
 aaacgcacga ggcaacttcc ttcaacacaa ggttccaaac ctacgccata agacgcctca 300
 cctatgatag cttagtggcc atgggttccct tgggacctta ctggaagttc gtgaggaagc 360
 tcatcatgaa cgaccttctc aacgccacca ctgtaaacaa gttgaggcct ttgaggacct 420
 aacagatccg caagtccctt aggggttatgg cccaaggcgc agaggcacag aagccccttg 480
 acttgaccga ggagcttctg aaatggacca acagcaccat ctctatgatg atgctcggcg 540
 aggctgagga gatcagagac atcgctcgcg aggttcttaa gatctatggc gaatacagcc 600
 tcaactgact catctggcca ttgaagcatc tcaagggttg aaagtatgag aagaggatcg 660
 acgacatctt gaacaagttc gacctgtcg ttgaaagagt catcaagaag cgccgtgaga 720
 tcgtgaggag gagaaagaac ggagaggttg ttgagggtga ggtcagcggg gttttccttg 780
 acactttgct tgaattcgct gaggatgaga ccacggagat caaaatcacc aaggaccaca 840
 tcaagggtct tgttgctgac tttttctcgg caggaaataga ctccacagcg gtggcaacag 900
 agtgggcatt ggcagaactc atcaacaatc ctaagggtgtt ggaaaaggct cgtgaggagg 960
 tctacagtgt tgtgggaaag gacagacttg tggacgaagt tgacactcaa aaccttctct 1020
 acattagagc aatcgtgaag gagacattcc gcatgcaccc gccactccca gtggtcaaaa 1080
 gaaagtgcac agaagagtgt gagattaatg gatattgtat ccagaggga gcattgattc 1140
 tcttcaatgt atggcaagta ggaagggacc ccaaatactg ggacagacca tcggagtctc 1200
 gtcttgagag gttcctagag acaggggctg aaggggaagc aaggcctctt gatcttaggg 1260
 gacaacattt tcaacttctc ccatttgggt ctgggagggg aatgtgccct ggagtcaatc 1320
 tggctacttc gggaatggca acacttcttg catctcttat tcagtgtctt gacttgcaag 1380
 tgctgggtcc acaaggacag atattgaagg gtggtgacgc caaagtttagc atggaagaga 1440
 gggccggcct cactgttcca agggcacata gtcttgtctg tgttccactt gcaaggatcg 1500
 g 1501

<210> 18
 <211> 499
 <212> PRT
 <213> Vicia villosa

<400> 18

Phe Leu His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg
 1 5 10 15
 His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly
 20 25 30
 His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
 35 40 45
 Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
 50 55 60
 Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
 65 70 75 80
 Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
 85 90 95
 Arg Arg Leu Thr Tyr Asp Ser Leu Val Ala Met Val Pro Phe Gly Pro
 100 105 110
 Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
 115 120 125
 Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
 130 135 140
 Phe Leu Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp
 145 150 155 160
 Leu Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
 165 170 175
 Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
 180 185 190
 Lys Ile Tyr Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
 195 200 205
 His Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
 210 215 220
 Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
 225 230 235 240
 Val Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly
 245 250 255
 Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu
 260 265 270
 Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe
 275 280 285
 Ser Ala Gly Ile Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
 290 295 300
 Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val
 305 310 315 320
 Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
 325 330 335
 Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
 340 345 350

Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile
 355 360 365

Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp
 370 375 380

Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
 385 390 395 400

Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu
 405 410 415

Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
 420 425 430

Gly Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu
 435 440 445

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
 450 455 460

Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg
 465 470 475 480

Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
 485 490 495

Ala Arg Ile

<210> 19
 <211> 1501
 <212> DNA
 <213> Lens culinaris

<400> 19
 tgtttctgca cttgcgtccc acaccactg caaaatcaaa agcacttcgc catctcccaa 60
 acccaccaag cccaaagcct cgtcttcctt tcataggaca cctcatctc ttaaaagaca 120
 aacttctcca ctacgcactc atcgacctct ccaaaaaaca tgggtccctta ttctccctct 180
 actttggctc catgccaaacc gttgttgccct ccacaccaga attgttcaag ctcttccctcc 240
 aaacgcacga ggcaacttcc ttcaacacaa gggtccaaac ctcagccata agacgcctca 300
 cctatgatag ctcaagtggc atgggttccat tcggacctta ctggaagttc gtgaggaagc 360
 tcatcatgaa cgaccttctc aacgccacca ccgtcaacaa gctcaggcct ttgaggaccc 420
 aacagatccg caagttcctt aggggttatgg cccaaagcgc agaggcccag aagccccttg 480
 acgtcaccga ggagcttctc aaatggacca acagcaccat ctccatgatg atgctcggcg 540
 aggctgagga gatcagagac atcgctcgcg aggttcttaa gatcttcggc gaatacagcc 600
 tcaactgactt catctggcct ttgaagtatc tcaaggttgg aaagtatgag aagaggattg 660
 atgacatctt gaacaagttc gaccctgtcg ttgaaagggt catcaagaag cgccgtgaga 720
 tcgtcagaag gagaaagaac ggagaagttg ttgagggcga ggccagcggc gtcttccctcg 780
 acactttgct tgaattcgct gaggacgaga ccatggagat caaaattacc aaggagcaaa 840
 tcaagggcct tgttgtcgac tttttctctg caggacaga ttccacagcg gtggcaacag 900
 agtgggcatt ggcagagctc atcaacaatc ccagggtggt gcaaaaggct cgtgaggagg 960
 tctacagtgt tgtgggcaaa gatatactcg ttgacgaagt tgacactcaa aaccttcctt 1020
 acattagggc cattgtgaag gagacattcc gaatgcaccc accactccca gtggtcaaaa 1080
 gaaagtgcac agaagagtgt gagattaatg ggcattgtgat cccagagggg gcatgtggtc 1140
 ttttcaatgt ttggcaagta ggaagggacc ccaaatactg ggacagacca tcagaattcc 1200
 gtcccagagag gttcttagaa actggtgctg aaggggaagc agggcctctt gatcttaggg 1260
 gccagcattt ccaactcctc ccatttggtt atgggaggag aatgtgccct ggtgtcaatt 1320
 tggctacttc aggaatggca acacttcttg catctcttat ccaatgcttt gacctgcaag 1380
 tgctgggccc tcaaggacaa atattgaaag gtgatgatgc caaagttagc atggaagaga 1440
 gagctggcct cacagttcca agggcacata gtctcgtttg tgttcactt gcaaggatcg 1500
 g 1501

<210> 20
 <211> 499

<212> PRT
<213> Lens culinaris

<400> 20

```

Phe Leu His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg
 1           5           10           15

His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly
          20           25           30

His Pro His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
          35           40           45

Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
          50           55           60

Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
          65           70           75           80

Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
          85           90           95

Arg Arg Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro
          100          105          110

Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
          115          120          125

Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
          130          135          140

Phe Leu Arg Val Met Ala Gln Ser Ala Glu Ala Gln Lys Pro Leu Asp
          145          150          155          160

Val Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
          165          170          175

Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
          180          185          190

Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
          195          200          205

Tyr Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
          210          215          220

Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
          225          230          235          240

Val Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Ala Ser Gly
          245          250          255

Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu
          260          265          270

Ile Lys Ile Thr Lys Glu Gln Ile Lys Gly Leu Val Val Asp Phe Phe
          275          280          285

Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
          290          295          300

Glu Leu Ile Asn Asn Pro Arg Val Leu Gln Lys Ala Arg Glu Glu Val
          305          310          315          320

Tyr Ser Val Val Gly Lys Asp Ile Leu Val Asp Glu Val Asp Thr Gln
          325          330          335

```

Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
340 345 350

Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile
355 360 365

Asn Gly His Val Ile Pro Glu Gly Ala Leu Val Leu Phe Asn Val Trp
370 375 380

Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
385 390 395 400

Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Gly Pro Leu
405 410 415

Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
420 425 430

Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu
435 440 445

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
450 455 460

Gly Gln Ile Leu Lys Gly Asp Asp Ala Lys Val Ser Met Glu Glu Arg
465 470 475 480

Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
485 490 495

Ala Arg Ile

<210> 21
<211> 1501
<212> DNA
<213> Lens culinaris

<400> 21
tggtttctgca cttgcgtccc acaccactg caaaatcaaa agcacttcgc catctcccaa 60
accacccaag cccaaagcct cgtcttccct tcataggaca ccttcatctc ttaaaagaca 120
aacttctcca ctacgcactc atcgacctct ccaaaaaaca tgggtcccta ttctctctct 180
actttggctc catgccaaac gttgttgcc tccacaccaga attgttcaag ctcttccctcc 240
aaacgcacga ggcaacttcc ttcaacacaa ggttccaaac ctcagccata agacgcctca 300
cctatgatag ctcaagtggc atgggtccct tccgacctta ctggaagttc gtgaggaagc 360
tcatcatgaa cgaccttctc aacgccacca ctgtaaacaa gttgaggcct ttgaggacct 420
aacagatccg caagttcctt agggttatgg cccaaggcgc agaggcacag aagccccttg 480
acttgaccga ggagcttctg aaatggacca acagcaccat ctccatgatg gtgctcggcg 540
aggctgagga gatcagagac atcgctcgcg aggttcttaa gatctttggc gaatacagcc 600
tcactgactt catctggcca ttgaagcatc tcaaggttg aaagtatgag aagaggatcg 660
acgacatctt gaacaagttc gacctgtcgt ttgaaagagt catcaagaag cgccgtgaga 720
tcgtgaggag gagaaagaac ggagagggtg ttgagggtga ggtcagcggg gttttccttg 780
acactttgct tgaattcgct gaggatgaga ccatggagat caaaatcacc aaggaccaca 840
tcaagggtct tgttgtcgac tttttctcgg caggaacaga ctccacagcg gtggcaacag 900
agtgggcatt ggcagaactc atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg 960
tctacagtgt tgtgggaaag gacagacttg tggacgaagt tgacactcaa aaccttccct 1020
acattagagc aatcgtgaag gagacattcc gcatgcacc gccactccca gtggtcaaaa 1080
gaaagtgcac agaagagtgt gagattaatg gatgtgtgac ccagaggga gcattgattc 1140
tcttcaatgt atggcaagta ggaagagacc ccaaatactg ggacagacca tcggagttcc 1200
gtcctgagag gttcctagag acaggggctg aaggggaagc aaggcctctt gatcttaggg 1260
gacgacattt tcaacttctc ccatttgggt ctgggaggag aatgtgccct ggagtcaatc 1320
tgctacttc ggggaatgca acacttctg catctcttat tcagtgtttt gacttgcagg 1380
tgctgggtcc acaaggacag atattgaagg gtggtgacgc caaagttagc atggaagaga 1440
gagccggcct cactgttcca agggcacata gtcttgtctg tgttccactt gcaaggatcg 1500
g 1501

<210> 22
 <211> 499
 <212> PRT
 <213> Lens culinaris

<400> 22

Phe Leu His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg
 1 5 10 15
 His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly
 20 25 30
 His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
 35 40 45
 Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
 50 55 60
 Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
 65 70 75 80
 Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
 85 90 95
 Arg Arg Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro
 100 105 110
 Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
 115 120 125
 Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
 130 135 140
 Phe Leu Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp
 145 150 155 160
 Leu Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
 165 170 175
 Val Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
 180 185 190
 Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
 195 200 205
 His Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
 210 215 220
 Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
 225 230 235 240
 Val Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly
 245 250 255
 Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu
 260 265 270
 Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe
 275 280 285
 Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
 290 295 300
 Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val
 305 310 315 320

Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
 325 330 335
 Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
 340 345 350
 Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile
 355 360 365
 Asn Gly Cys Val Thr Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp
 370 375 380
 Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
 385 390 395 400
 Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu
 405 410 415
 Asp Leu Arg Gly Arg His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
 420 425 430
 Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu
 435 440 445
 Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
 450 455 460
 Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg
 465 470 475 480
 Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
 485 490 495
 Ala Arg Ile

<210> 23
 <211> 1566
 <212> DNA
 <213> Phaseolus aureus

<400> 23
 atgttgctgg aacttgcaact tgggttiattg gttttggctc tgtttctgca cttgcgtccc 60
 actcccactg caaaatcaaa agcacttcgc catctcccaa accaccaag cccaaagcct 120
 cgtcttccct tcataggaca ccttcattctc ttaaaagaca aacttctcca ctacgcactc 180
 atcgacctct ccaaaaaaca tggtcctcta ttctctctct actttggctc catgccaaac 240
 gttgttgccct ccacaccaga attgttcaag ctcttctccc aaacgcacga ggcaacttcc 300
 ttcaacacaa ggttccaaac ctcagccata agacgcctca cctatgatag ctcaagtggc 360
 atgggttccct tcggaccta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc 420
 aacgccacca ctgtaaaca gttgaggcct ttgaggaccc aacagatccg caagttcctt 480
 agggttatgg cccaaggcgc agaggcacag aagccccttg acttgaccga ggagcttctg 540
 aaatggacca acagcaccat ctccatgatg atgctcggcg aggtgagga gatcagagac 600
 atcgctcgcg aggttcttaa gatctttggc gaatacagcc tcaactgactt catctggcca 660
 ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg acgacatctt gaacaagttc 720
 gacctgtcgt ttgaaagagt catcaagaag cgccgtgaga tcgtgaggag gagaaagaac 780
 ggagaggttg ttgaggggtga ggtcagcggg gttttccttg acactttgct tgaattcgct 840
 gaggatgaga ccatggagat caaaatcacc aaggaccaca tcaagggctt tgttgctcgc 900
 tttttctcgg caggaacaga ctccacagcg atggcaacag agtgggcatt ggcagaactc 960
 atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg cctacagtgt tgtgggaaag 1020
 gacagacttg tggacgaagt tgacactcaa aaccttcctt acattagagc aatcgtgaag 1080
 gagacattcc gcatgcaccc gccactccca gtggtcaaaa gaaagtgcac agaagagtgt 1140
 gagattaatg gatattgtat ccagaggga gcattgattc tcttcaatgt atggcaagta 1200
 ggaagagacc ccaaatactg ggacagacca tcggagttcc gtccctgagag gttcctagag 1260
 acaggggctg aaggggaagc aaggcctctt gatcttaggg gacaacattt tcaacttctc 1320
 ccatttgggt ctgggaggag aatgtgccct ggagtcaatc tggctacttc gggaatggca 1380

acacttctcg catctcttat tcagtgcttt gacttgcaag tgctgggtcc acaaggacag 1440
 atattgaagg gtggtgacgc caaagtttagc atggaagaga gagccggcct cactgttcca 1500
 agggcacata gtcttgctcg tgttcactt gcaaggatcg gcgttgcatc taaactcctt 1560
 tctaaa 1566

<210> 24
 <211> 522
 <212> PRT
 <213> Phaseolus aureus

<400> 24
 Met Leu Leu Glu Leu Ala Leu Gly Leu Leu Val Leu Ala Leu Phe Leu
 1 5 10 15
 His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg His Leu
 20 25 30
 Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
 35 40 45
 His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
 50 55 60
 Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr
 65 70 75 80
 Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His
 85 90 95
 Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg
 100 105 110
 Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp
 115 120 125
 Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
 130 135 140
 Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu
 145 150 155 160
 Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr
 165 170 175
 Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu
 180 185 190
 Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
 195 200 205
 Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu
 210 215 220
 Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
 225 230 235 240
 Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
 245 250 255
 Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe
 260 265 270
 Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile Lys
 275 280 285

Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala
290 295 300

Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu
305 310 315 320

Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Ala Tyr Ser
325 330 335

Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
340 345 350

Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
355 360 365

Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
370 375 380

Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val
385 390 395 400

Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
405 410 415

Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu
420 425 430

Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
435 440 445

Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
450 455 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
465 470 475 480

Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
485 490 495

Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
500 505 510

Ile Gly Val Ala Ser Lys Leu Leu Ser Lys
515 520

<210> 25
<211> 1566
<212> DNA
<213> Phaseolus aureus

<400> 25
atgttgctgg aacttgcaact tggttttattg gttttggctc tgtttctgca cttgcgtccc 60
acaccactg caaaatcaaa agcacttcgc catctcccaa acccaccaag cccaaagcct 120
cgtcttccct tcataggaca cttcatctc ttaaaagaca aacttctcca ctacgcgtc 180
atcgacctct ccaaaaaaca tgggtccctta ttctctctct actttggctc catgccaacc 240
gttgtttgct ccacaccaga attgttcaag ctcttctctc aaacgcacga ggcaacttcc 300
ttcaacacaa ggttccaaac ctacagccata agacgcctca cctatgatag ctacgtggcc 360
atggttccct tcggacctta ctggaagtgc gtgaggaagc tcatcatgaa cgaccttctc 420
aacgccacca ctgtaaacaa gttgaggcct ttgaggacc aacagatccg caagttcctt 480
agggctatgg cccaaggcgc agaggcacag aagccccttg acttgaccga ggagcttctg 540
aaatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac 600
atcgctcgcg aggttcttaa gatctttggc gaatacagcc tcaactgactt catctggcca 660
ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg acgacatctt gaacaagtct 720
gacctgtctg ttgaaagagt catcaagaag cgccgtgaga tcgtgaggag gagaagaac 780
ggagaggttg ttgaggggtga gggtcagcggg gttttccttg acactttgct tgaattcgct 840
gaggatgaga ccatggagat caaatcacc aaggaccaca tcaaggttct tgttgcgcac 900

```

tttttctcgg caggaacaga ctccacagcg gtggcaacag agtgggcatt ggcagaactc 960
atcaacaatc ctaaggtggt ggaaaaggct cgtgaggagg tctacagtgt tgtgggaaag 1020
gacagacttg tggacgaagt tgacactcaa aaccttcctt acattagagc aatcgtgaag 1080
gagacattcc gcatgcaccc gccactccca gtggtcaaaa gaaagtgcac ggaagagtgt 1140
gagattaatg gatatgtgat ccagagggga gcattgattc tcttcaatgt atggcaagta 1200
ggaagagacc ccaaatactg ggacagacca tcggagttcc gtcctgagag gttcctagag 1260
acaggggctg aaggggaagc aaggcctctt gatcttaggg gacaacattt tcaacttctc 1320
ccatttgggt ctgggaggag aatgtgccct ggagtcaatc tggctacttc gggaatggca 1380
acacttcttg catctcttat tcagtgtctt gacttgcaag tgctgggtcc acaaggacag 1440
atattgaagg gtggtgacgc caaagttagc atggaagaga gagccggcct cactgttcca 1500
agggcacata gtcttgtctg tgttccactt gcaaggatcg gcgttgcatc taaactcctt 1560
tcttaa

```

<210> 26
 <211> 521
 <212> PRT
 <213> Phaseolus aureus

<400> 26

Met	Leu	Leu	Glu	Leu	Ala	Leu	Gly	Leu	Leu	Val	Leu	Ala	Leu	Phe	Leu
1				5					10					15	
His	Leu	Arg	Pro	Thr	Pro	Thr	Ala	Lys	Ser	Lys	Ala	Leu	Arg	His	Leu
			20					25					30		
Pro	Asn	Pro	Pro	Ser	Pro	Lys	Pro	Arg	Leu	Pro	Phe	Ile	Gly	His	Leu
	35						40					45			
His	Leu	Leu	Lys	Asp	Lys	Leu	Leu	His	Tyr	Ala	Leu	Ile	Asp	Leu	Ser
	50					55					60				
Lys	Lys	His	Gly	Pro	Leu	Phe	Ser	Leu	Tyr	Phe	Gly	Ser	Met	Pro	Thr
	65				70					75					80
Val	Val	Ala	Ser	Thr	Pro	Glu	Leu	Phe	Lys	Leu	Phe	Leu	Gln	Thr	His
				85					90					95	
Glu	Ala	Thr	Ser	Phe	Asn	Thr	Arg	Phe	Gln	Thr	Ser	Ala	Ile	Arg	Arg
			100					105					110		
Leu	Thr	Tyr	Asp	Ser	Ser	Val	Ala	Met	Val	Pro	Phe	Gly	Pro	Tyr	Trp
	115					120						125			
Lys	Phe	Val	Arg	Lys	Leu	Ile	Met	Asn	Asp	Leu	Leu	Asn	Ala	Thr	Thr
	130					135					140				
Val	Asn	Lys	Leu	Arg	Pro	Leu	Arg	Thr	Gln	Gln	Ile	Arg	Lys	Phe	Leu
	145				150					155					160
Arg	Ala	Met	Ala	Gln	Gly	Ala	Glu	Ala	Gln	Lys	Pro	Leu	Asp	Leu	Thr
				165					170					175	
Glu	Glu	Leu	Leu	Lys	Trp	Thr	Asn	Ser	Thr	Ile	Ser	Met	Met	Met	Leu
			180					185					190		
Gly	Glu	Ala	Glu	Glu	Ile	Arg	Asp	Ile	Ala	Arg	Glu	Val	Leu	Lys	Ile
		195				200						205			
Phe	Gly	Glu	Tyr	Ser	Leu	Thr	Asp	Phe	Ile	Trp	Pro	Leu	Lys	His	Leu
	210					215					220				
Lys	Val	Gly	Lys	Tyr	Glu	Lys	Arg	Ile	Asp	Asp	Ile	Leu	Asn	Lys	Phe
	225				230				235						240
Asp	Pro	Val	Val	Glu	Arg	Val	Ile	Lys	Lys	Arg	Arg	Glu	Ile	Val	Arg
				245					250					255	

Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe
260 265 270

Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile Lys
275 280 285

Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala
290 295 300

Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu
305 310 315 320

Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser
325 330 335

Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
340 345 350

Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
355 360 365

Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
370 375 380

Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val
385 390 395 400

Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
405 410 415

Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu
420 425 430

Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
435 440 445

Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
450 455 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
465 470 475 480

Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
485 490 495

Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
500 505 510

Ile Gly Val Ala Ser Lys Leu Leu Ser
515 520

<210> 27
<211> 1566
<212> DNA
<213> Phaseolus aureus

<400> 27
atgttgctgg aacttgcaact tggtttattg gttttggctc tgtttctgca cttgcgtccc 60
acaccactg caaaatcaaa agcacttcgc catctcccaa accaccaag cccaaagcct 120
cgtcttcct tcataggaca ccttcattctc ttaaaagaca aacttctcca ctacgcactc 180
atcgacctct ccaaaaaaca tggtcctta ttctctctct actttggctc catgccaacc 240
gttggtgcct ccacaccaga attgttcaag ctcttctctc aaacgcacga ggcaacttcc 300
ttcaacacaa ggttccaaac ctgagccata agacgcctca cctatgatag ctgagtggcc 360
atggttcct tcggacctta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc 420
aacgccacca ctgtaaacaa gttgaggcct ttgaggaccc aacagatccg caagtctctt 480

```

agggttatgg cccaaggcgc agaggcacag aagcccccttg acttgaccga ggagcttctg 540
aatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac 600
atcgctcgcg aggttcttaa gatctttggc gaatacagcc tcactgactt catctggcca 660
ttgaagcatc tcaagggttg aaagtatgag aagaggatcg acgacatctt gaacaagttc 720
gacctgtcg ttgaaagagt catcaagaag cgccgtgaga tcgtgaggag gagaaagaac 780
ggagaggttg ttgagggtag ggtcagcggg gttttccttg acactttgct tgaattcgct 840
gaggatgaga ccacgggat caaaatcacc aaggaccaca tcaagggtct tgttgctgac 900
tttttctcgg caggaacaga ctccacagcg gtggcaacag agtgggcatt ggcagaactc 960
atcaacaatc ctaagggtgt ggaaaaggct cgtgaggagg tctacagtgt tgtgggaaag 1020
gacagacttg tggacgaagt tgacactcaa aaccttcctt acattagagc aatcgtgaag 1080
gagacattcc gcatgcaccc gccactcca gtggtcaaaa gaaagtgcac agaagagtgt 1140
gagattaatg gatatgtgat ccagagggga gcattgattc tcttcaatgt atggcaagta 1200
ggaagagacc ccaaatactg ggacagacca tcggagttcc gtcctgagag gttcctagag 1260
acaggggctg aaggggaagc aaggcctctt gatcttaggg gacaacattt tcaacttctc 1320
ccatttgggt ctgggaggag aatgtgccct ggagtcaatc tggctacttc gggaatggca 1380
acacttcttg catctcttat tcagtgtctt gacttgcaag tgctgggtcc acaaggacag 1440
atattgaagg gtggtgacgc caaagttagc atggaagaga gggccgcct cactgttcca 1500
agggcacata gtcttgtctg tgttccactt gcaaggatcg gcgttgcatc taaactcctt 1560
tcttaa

```

```

<210> 28
<211> 521
<212> PRT
<213> Phaseolus aureus

```

```

<400> 28
Met Leu Leu Glu Leu Ala Leu Gly Leu Leu Val Leu Ala Leu Phe Leu
  1             5             10             15
His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg His Leu
      20             25             30
Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
      35             40             45
His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
      50             55             60
Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr
      65             70             75             80
Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His
      85             90             95
Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg
      100            105            110
Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp
      115            120            125
Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
      130            135            140
Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu
      145            150            155            160
Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr
      165            170            175
Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu
      180            185            190
Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
      195            200            205

```

Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu
 210 215 220
 Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
 225 230 235 240
 Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
 245 250 255
 Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe
 260 265 270
 Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu Ile Lys
 275 280 285
 Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala
 290 295 300
 Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu
 305 310 315 320
 Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser
 325 330 335
 Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
 340 345 350
 Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
 355 360 365
 Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
 370 375 380
 Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val
 385 390 395 400
 Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
 405 410 415
 Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu
 420 425 430
 Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
 435 440 445
 Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
 450 455 460
 Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
 465 470 475 480
 Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
 485 490 495
 Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
 500 505 510
 Ile Gly Val Ala Ser Lys Leu Leu Ser
 515 520

<210> 29
 <211> 1566
 <212> DNA
 <213> Phaseolus aureus

<400> 29

```

atgttgctgg aacttgcaact tggtttattg gttttggctc tgtttctgca cttgcgtccc 60
acaccactg caaaatcaaa agcacttcgc catctcccaa acccaccaag cccaaagcct 120
cgtcttcctt tcataggaca ccttcatctc ttaaaagaca aacttctcca ctacgcactc 180
atcgacctct ccaaaaaaca tggtcctta ttctctctct actttggctc catgccaacc 240
gttggtgcct ccacaccaga attgttcaag ctcttctctc aaacgcacga ggcaacttcc 300
ttcaacacaa ggttccaaac ctacgccata agacgcctca cctatgatag ctacgtggcc 360
atggttcctt tcggacctta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc 420
aacgccacca ctgtaaaca gttgaggcct ttgaggaccc aacagatccg caagttcctt 480
agggttatgg cccaaggcgc agaggcacag aagccccttg acttgaccga ggagcttctg 540
aaatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac 600
atcgctcgcg aggttcttaa gatctttggc gaatacagcc tctactgactt catctggcca 660
ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg acgacatctt gaacaagttc 720
gaccctgtcg ttgaaagagt catcaagaag cgccgtgaga tcgtgaggag gagaagaac 780
ggagagggtg ttgagggtga ggtcagcggg gttttccttg acactttgct tgaattcgct 840
gaggatgaga ccatggagat caaatcacc aaggaccaca tcaaggtct tgtgtcgac 900
tttttctcgg caggaacaga ctccacagcg gaggcaacag agtgggcatt ggcagaactc 960
atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg tctacagtgt tgtgggaaag 1020
gacagacttg tggacgaagt tgacactcaa aaccttcctt acattagagc aatcgtgaag 1080
gagacattcc gcatgcaccc gccactccca gtggtcaaaa gaaagtgcac agaagagtgt 1140
gagattaatg gatattgtat ccagaggga gcattgattc tcttcaatgt atggcaagta 1200
ggaagagacc ccaataactg ggacagacca tcggagttcc gtcctgagag gttcctagag 1260
acaggggctg aaggggaagc aaggcctctt gatcttaggg gacaacattt tcaacttctc 1320
ccatttgggt ctgggaggag aatgtgccct ggagtcaatc tggctacttc gggaatggca 1380
acacttcttg catctcttat tcagtgtctt gacttgcaag tgctgggtcc acaaggacag 1440
atattgaagg gtggtgacgc caagtttagc atggaagaga gagccggcct cactgttcca 1500
agggcacata gtcttgtctg tgttcactt gcaaggatcg gcgttgcatc taaactcctt 1566
tcttaa

```

<210> 30

<211> 521

<212> PRT

<213> Phaseolus aureus

<400> 30

```

Met Leu Leu Glu Leu Ala Leu Gly Leu Leu Val Leu Ala Leu Phe Leu
  1             5             10             15

His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg His Leu
      20             25             30

Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
      35             40             45

His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
      50             55             60

Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr
      65             70             75             80

Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His
      85             90             95

Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg
      100            105            110

Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp
      115            120            125

Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
      130            135            140

Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu
      145            150            155            160

```

Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr
 165 170 175
 Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu
 180 185 190
 Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
 195 200 205
 Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu
 210 215 220
 Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
 225 230 235 240
 Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
 245 250 255
 Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe
 260 265 270
 Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile Lys
 275 280 285
 Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala
 290 295 300
 Gly Thr Asp Ser Thr Ala Glu Ala Thr Glu Trp Ala Leu Ala Glu Leu
 305 310 315 320
 Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser
 325 330 335
 Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
 340 345 350
 Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
 355 360 365
 Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
 370 375 380
 Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val
 385 390 395 400
 Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
 405 410 415
 Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu
 420 425 430
 Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
 435 440 445
 Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
 450 455 460
 Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
 465 470 475 480
 Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
 485 490 495
 Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
 500 505 510

Ile Gly Val Ala Ser Lys Leu Leu Ser
515 520

<210> 31
<211> 1566
<212> DNA
<213> Trifolium pratense

<400> 31
atgttgctgg aacttgcaact tgggtttattg gttttggctc tgtttctgca cttgcgtccc 60
acacccactg caaaatcaaaa agcacttcgc catctcccaa acccaccaag cccaaagcct 120
cgtcttccct tcataggaca ccttcatctc ttaaaagaca aacttctcca ctacgcactc 180
atcgacctct ccaaaaaaca tgggccctta ttctctctct actttggctc catgccaacc 240
gttggttgct ccacaccaga attgttcaag ctcttccctc aaacgcacga ggcaacttcc 300
ttcaacacaa ggttccaaac ctcagccata agacgcctca cctatgatag ctcagtggcc 360
atggttccca tcggacctta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc 420
aacgccacca ctgtaaaca gttgaggcct ttgaggaccc aacagatccg caagttcctt 480
agggttatgg cccaaggcgc agaggcacag aagccccttg acttgaccga ggagcttctg 540
aaatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac 600
atcgctcgcg aggttcttaa gatctttggc gaatacacgc tcaactgactt catctggcca 660
ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg acgacatctt gaacaagttc 720
gacctgtcg ttgaaagagt catcaagaag cgccgtgaga tcgtgaggag gaaaaagaac 780
ggagaggttg atgaggggtga ggtcagcggg gttttccttg acactttgct tgaattcgct 840
gaggatgaga ccacgggat caaaatcacc aaggaccaca tcaagggtct tgttgtcgac 900
tttttctcgg cagggacaga ctccacagcg gtggcaacag agtgggcatt ggcagaactc 960
atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg tctacagtgt tgtgggaaag 1020
gacagacttg tggacgaagt tgacactcaa aaccttctt acattagagc aatcgtgaag 1080
gagacattcc gcatgcaccc gccactccca gtggtcaaaa gaaagtgcac agaagagtgt 1140
gagattaatg gatatgtgat ccagagggga gcattgattc tcttcaatgt atggcaagta 1200
ggaagagacc ccaaatactg ggacagacca tcggagttcc gtccctgagag gttcctagag 1260
acaggggctg aaggggaagc aaggcctctt gatcttaggg gacaacattt tcaacttctc 1320
ccatttgggt ctgggaggag aatgtgccct ggagtcacatc tggctacttc gggaatggca 1380
acacttcttg catctcttat tcagtgtctt gacttgcaag tgctgggtcc acaaggacag 1440
atattgaagg gtggtgacgc caaagttagc atggaagaga gggccggcct cactgttcca 1500
agggcacata gtcttgtctg tgttccactt gcaaggatcg gcgttgcac taaactcctt 1560
tcttaa 1566

<210> 32
<211> 521
<212> PRT
<213> Trifolium pratense

<400> 32
Met Leu Leu Glu Leu Ala Leu Gly Leu Leu Val Leu Ala Leu Phe Leu
1 5 10 15
His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg His Leu
20 25 30
Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
35 40 45
His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
50 55 60
Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr
65 70 75 80
Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His
85 90 95
Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg
100 105 110
Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Ile Gly Pro Tyr Trp
115 120 125

Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
 130 135 140
 Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu
 145 150 155 160
 Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr
 165 170 175
 Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu
 180 185 190
 Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
 195 200 205
 Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu
 210 215 220
 Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
 225 230 235 240
 Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
 245 250 255
 Arg Arg Lys Asn Gly Glu Val Asp Glu Gly Glu Val Ser Gly Val Phe
 260 265 270
 Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu Ile Lys
 275 280 285
 Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala
 290 295 300
 Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu
 305 310 315 320
 Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser
 325 330 335
 Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
 340 345 350
 Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
 355 360 365
 Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
 370 375 380
 Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val
 385 390 395 400
 Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
 405 410 415
 Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu
 420 425 430
 Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
 435 440 445
 Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
 450 455 460
 Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
 465 470 475 480

Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
485 490 495

Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
500 505 510

Ile Gly Val Ala Ser Lys Leu Leu Ser
515 520

<210> 33
<211> 1566
<212> DNA
<213> Trifolium pratense

<400> 33
atgttgctgg aacttgcaact tggtttattg gttttggctc tgttttctgca cttgcgtccc 60
acacccactg caaaatcaaaa agcacttcgc catctcccaa accaccaag cccaaagcct 120
cgtcttccct tcataggaca ccttcatctc ttaaaagaca aacttctcca ctacgcactc 180
atcgacctct ccaaaaaaca tgggtccctta ttctctctct actttggctc catgccaacc 240
gttgttgccct ccacaccaga attgttcaag ctcttcctcc aaacgcacga ggcaacttcc 300
ttcaacacaa ggttccaaac ctccagccata agacgcctca cctatgatag ctcatgggcc 360
atgggtccct tcggacctta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc 420
aacgccacca ctgtaaacaa gttgaggcct ttgaggaccc aacagatccg caagtctcctt 480
agggttatgg cccaaggcgc agaggcacag aagccccttg acttgaccga ggagcttctg 540
aaatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac 600
atcgctcgcg aggttcttaa gatctttggc gaatacagcc tcaactgactt catctggcca 660
ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg acgacatctt gaacaagttc 720
gacctgtgctg ttgaaagagt catcaagaag cgccgtgaga tcgtgaggag gagaaagaac 780
ggagagggtt ttgaggggtga ggtcagcggg gttttccttg acactttgct tgaattcgct 840
gaggatgaga ccacggagat caaaatcacc aaggaccaca tcaaggtctt tgttgcgcac 900
tttttctcgg caggaacaga ctccacagcg gtggcaacag agtgggcatt ggcagaactc 960
atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg tctacagtgt tgtgggaaag 1020
gacagacttg tggacgaagt tgacactcaa aaccttcctt acattagagc aatcgtgaag 1080
gagacattcc gcatgcaccc gccactccca gtggtcaaaa gaaagtgcac agaagagtgt 1140
gagattaatg gatatgtgat cccagaggga gcattgattc tcttcaatgt atggcaagta 1200
ggaagagacc ccaaatactg ggacagacca tcggagttcc gtctgagag gttcctagag 1260
acaggggctg aaggggaagc aaggcctctt gatcttaggg gacaacattt tcaacttctc 1320
ccatttgggt ctgggaggag aatgtgccct ggagtcaatc tggctacttc gggaatggca 1380
acacttcttg catctcttat tcagtgtctt gacttgcaag tgctgggtcc acaaggacag 1440
atattgaagg gtggtgacgc caaagttagc atggaagaga gggccggcct cactgttcca 1500
agggcacata gtcttgtctg tgttccactt gcaaggatcg gcgttgcac taaactcctt 1560
tcttaa 1566

<210> 34
<211> 521
<212> PRT
<213> Trifolium pratense

<400> 34
Met Leu Leu Glu Leu Ala Leu Gly Leu Leu Val Leu Ala Leu Phe Leu
1 5 10 15
His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg His Leu
20 25 30
Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
35 40 45
His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
50 55 60
Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr
65 70 75 80

Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His
 85 90 95
 Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg
 100 105 110
 Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp
 115 120 125
 Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
 130 135 140
 Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu
 145 150 155 160
 Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr
 165 170 175
 Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu
 180 185 190
 Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
 195 200 205
 Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu
 210 215 220
 Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
 225 230 235 240
 Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
 245 250 255
 Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe
 260 265 270
 Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu Ile Lys
 275 280 285
 Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala
 290 295 300
 Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu
 305 310 315 320
 Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser
 325 330 335
 Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
 340 345 350
 Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
 355 360 365
 Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
 370 375 380
 Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val
 385 390 395 400
 Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
 405 410 415
 Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu
 420 425 430

Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
435 440 445

Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
450 455 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
465 470 475 480

Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
485 490 495

Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
500 505 510

Ile Gly Val Ala Ser Lys Leu Leu Ser
515 520

<210> 35
<211> 1563
<212> DNA
<213> Pisum sativum

<400> 35
atgttgctgg aacttgcaact tgggtttgttt gtgttagctt tgtttctgca cttgcgtccc 60
acaccaagcg caaaatcaaaa agcacttcgc cactcccaa accctccaag cccaaagcct 120
cgtcttccct tcattggcca ccttcacctc ttaaaagata aacttctcca ctatgcactc 180
atcgatctct ccaaaaagca tggcccttta ttctctctct ccttcggctc catgccaaacc 240
gtcgttgccct ccacccctga gttgttcaag ctcttccctc aagcccacga ggcaacttcc 300
ttcagcacaa ggttccaaac ctctgccgta agacgcctca cttacgacaa ctctgtggcc 360
atggttccat tcggacctta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc 420
aacgccacca ccgtcaacga gctcaggcct ttgaggaccc aacagatccg caagttcctt 480
agggttatgg cccaaagcgc agaggccag aagccccttg acgtcaccga ggagcttctc 540
aatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac 600
atcgctcgcg aggtccttaa gatcttcggc gaatacagcc tcaactgact catctggcct 660
ttgaagtatc tcaaggttgg aaagtatgag aagaggattg atgacatctt gaacaagttc 720
gacctgtcgc ttgaaagggt catcaagaag cgccgtgaga tcgtcagaag gagaaagaac 780
ggagaagttg ttgagggcga ggccagcggc gtcttctctg acactttgct tgaattcgct 840
gaggacgaga ccatggagat caaaattacc aaggagcaaa tcaagggcct tgttgctgac 900
tttttctctg cagggacaga ttccacagcg gtggcaacag agtgggcatt ggcagagctc 960
atcaacaate ccagggtggt gcaaaaaggct cgtgaggagg tctacagtgt tgtgggcaaa 1020
gatagactcg ttgacgaagt cgacactcaa aaccttcctt acattagggc cattgtgaag 1080
gagacattcc gaatgcaccc accactccca gtggtcaaaa gaaagtgcac agaagagtgt 1140
gagattaatg ggtatgtgat cccagaggga gcattggttc ttttcaatgt ttggcaagta 1200
ggaaaggacc ccaataactg ggacagacca tcagaattcc gtcccagagag gttcttagaa 1260
actggcgctg aaggggaagc agggcctctt gatcttaggg gccagcattt ccaactcctc 1320
ccatttgggt ctgggaggag aatgtgcctt ggtgtcaatt tggctacttc aggaatggca 1380
acacttcttg catctcttat ccaatgcttt gacctgcaag tgctgggccc tcaaggacaa 1440
atattgaaag gtgacgatgc caaagttagc atggaagaga gagctggcct caccgttcca 1500
agggcacata gtctcgtttg tgttccactt gcaaggatcg gcgttgcatc taaactcctt 1560
tct 1563

<210> 36
<211> 521
<212> PRT
<213> Pisum sativum

<400> 36
Met Leu Leu Glu Leu Ala Leu Gly Leu Phe Val Leu Ala Leu Phe Leu
1 5 10 15

His Leu Arg Pro Thr Pro Ser Ala Lys Ser Lys Ala Leu Arg His Leu
20 25 30

Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
35 40 45

His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
 50 55 60
 Lys Lys His Gly Pro Leu Phe Ser Leu Ser Phe Gly Ser Met Pro Thr
 65 70 75 80
 Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Ala His
 85 90 95
 Glu Ala Thr Ser Phe Ser Thr Arg Phe Gln Thr Ser Ala Val Arg Arg
 100 105 110
 Leu Thr Tyr Asp Asn Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp
 115 120 125
 Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
 130 135 140
 Val Asn Glu Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu
 145 150 155 160
 Arg Val Met Ala Gln Ser Ala Glu Ala Gln Lys Pro Leu Asp Val Thr
 165 170 175
 Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu
 180 185 190
 Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
 195 200 205
 Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys Tyr Leu
 210 215 220
 Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
 225 230 235 240
 Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
 245 250 255
 Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Ala Ser Gly Val Phe
 260 265 270
 Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile Lys
 275 280 285
 Ile Thr Lys Glu Gln Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala
 290 295 300
 Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu
 305 310 315 320
 Ile Asn Asn Pro Arg Val Leu Gln Lys Ala Arg Glu Glu Val Tyr Ser
 325 330 335
 Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
 340 345 350
 Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
 355 360 365
 Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
 370 375 380
 Tyr Val Ile Pro Glu Gly Ala Leu Val Leu Phe Asn Val Trp Gln Val
 385 390 395 400

Gly Lys Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
 405 410 415

Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Gly Pro Leu Asp Leu
 420 425 430

Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
 435 440 445

Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
 450 455 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
 465 470 475 480

Ile Leu Lys Gly Asp Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
 485 490 495

Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
 500 505 510

Ile Gly Val Ala Ser Lys Leu Leu Ser
 515 520

<210> 37
 <211> 1496
 <212> DNA
 <213> Trifolium repens

<400> 37
 tctcacttg cgtccacacc aagtgcata tcaaaagcac ttccgccacct cccaaaccct 60
 ccaagcccaa ggctcgtct tcccttcatt ggccaccttc acctcttaaa agataaactt 120
 ctccactatg caccatcga tctctccaaa aagcatggcc ccttattctc tctctccttc 180
 ggctccatgc caaccgtcgt tgcctccacc cctgagttgt tcaagctctt cctccaaacc 240
 cagcaggcaa cttccttcaa cacaagggtc caaacctctg ccataagaca cctcacttac 300
 gacaactctg tggccatggt tccattcgga ccttactgga agttcgtgag gaagctcatc 360
 atgaacgacc ttctcaacgc caccacgctc aacaagctca ggcctttgag gacccaacag 420
 atccgcaagt tccttagggt tatggcccaa agcgcagagg cccagaagcc ccttgacgtc 480
 accgaggagc ttctcaaatg gaccaacagc accatctcca tgatgatgct cggcgaggct 540
 gaggagatca gagacatcgc tcgcgaggtt ctttaagatct tcggcgaata cagcctcact 600
 gacttcactt ggcctttgaa gtacctcaag gttggaaaagt atgagaagag gattgatgac 660
 atcttgaaca agttcgaccc tgtcgttgaa agggctcatca agaagcgccg tgagatcgtc 720
 agaaggagaa agaacggaga agttgttgag ggcgaggcca gcggcgtctt cctcgacact 780
 ttgcttgaat tcgctgagga cgagaccatg gagatcaaaa ttaccaagga gcaaatcaag 840
 ggccttggtg tcgacttttt ctctgcaggg acagattcca cagcgtgtgt aacagagtgg 900
 gcattggcag agtcatcaa caatcccagg gtgttgcaaa aggctcgtga ggaggtctac 960
 agtgttggtg gcaaagatag actcgttgac gaagttgaca ctcaaaacct tccttacatt 1020
 agggccattg tgaaggagac attccgaatg caccaccac tcccagtggt caaaagaaaag 1080
 tgcacagaag agtgtgagat taatgggtat gtgatcccag agggagcatt ggttcttttc 1140
 aatgtttggc aagtaggaag ggaccccaaa tactgggaca gaccatcaga atcccgctcc 1200
 gagaggttct tagaaactgg tgcgtgaagg gaagcagggc ctcttgatct taggggcccag 1260
 catttccaac tcctccatt tgggtctggg aggagaatgt gccctgggtg cagtttggtc 1320
 acttcaggaa tggcaacact tcttgcatct cttatccaat gctttgacct gcaagtgtg 1380
 ggccctcaag gacaaatatt gaaaggtgat gatgccaaag ttagcatgga agagagagct 1440
 ggcctcacag ttccaagggc acatagtctc gtttgtgttc cacttgcaag gatcgg 1496

<210> 38
 <211> 498
 <212> PRT
 <213> Trifolium repens

<400> 38
 Ser His Leu Arg Pro Thr Pro Ser Ala Ile Ser Lys Ala Leu Arg His
 1 5 10 15

Leu Pro Asn Pro Pro Ser Pro Arg Pro Arg Leu Pro Phe Ile Gly His
 20 25 30
 Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Pro Ile Asp Leu
 35 40 45
 Ser Lys Lys His Gly Pro Leu Phe Ser Leu Ser Phe Gly Ser Met Pro
 50 55 60
 Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr
 65 70 75 80
 His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg
 85 90 95
 His Leu Thr Tyr Asp Asn Ser Val Ala Met Val Pro Phe Gly Pro Tyr
 100 105 110
 Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr
 115 120 125
 Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe
 130 135 140
 Leu Arg Val Met Ala Gln Ser Ala Glu Ala Gln Lys Pro Leu Asp Val
 145 150 155 160
 Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met
 165 170 175
 Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys
 180 185 190
 Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys Tyr
 195 200 205
 Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys
 210 215 220
 Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val
 225 230 235 240
 Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Ala Ser Gly Val
 245 250 255
 Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile
 260 265 270
 Lys Ile Thr Lys Glu Gln Ile Lys Gly Leu Val Val Asp Phe Phe Ser
 275 280 285
 Ala Gly Thr Asp Ser Thr Ala Val Val Thr Glu Trp Ala Leu Ala Glu
 290 295 300
 Leu Ile Asn Asn Pro Arg Val Leu Gln Lys Ala Arg Glu Glu Val Tyr
 305 310 315 320
 Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn
 325 330 335
 Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro
 340 345 350
 Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn
 355 360 365

Gly Tyr Val Ile Pro Glu Gly Ala Leu Val Leu Phe Asn Val Trp Gln
 370 375 380

Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Ser Arg Pro
 385 390 395 400

Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Gly Pro Leu Asp
 405 410 415

Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg
 420 425 430

Met Cys Pro Gly Val Ser Leu Ala Thr Ser Gly Met Ala Thr Leu Leu
 435 440 445

Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly
 450 455 460

Gln Ile Leu Lys Gly Asp Asp Ala Lys Val Ser Met Glu Glu Arg Ala
 465 470 475 480

Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala
 485 490 495

Arg Ile

<210> 39
 <211> 1501
 <212> DNA
 <213> Trifolium repens

<400> 39
 tggtttctgca cttgcgtccc acaccactg caaaatcaaa agcacttcgc catctcccaa 60
 acccaccag cccaaagcct cgtcttccct tcataggaca ccttcatctc ttaaaagaca 120
 aacttctcca ctacgcactc atcgacctct ccaaaaaaca tggctccctta ttctctctct 180
 actttggctc catgccaaacc gttgttgctt ccacaccaga attgttcaag ctcttctctc 240
 aaacgcacga ggcaacttcc ttcaacacaa ggttccaaac ctacagccata agacgcctca 300
 cctacgacaa ctctgtggcc atgggttccat tcggacctta ctggaagttc gtgaggaagc 360
 tcatcatgaa cgaccttctc aacgccacca ccgtcaacaa gctcaggcct ttgaggacct 420
 aacagatccg caagtctctt aggggttatgg cccaaagcgc agaggcccag aagccccttg 480
 acgtcaccga ggagcttctc aaatggacca acagcaccat ctccatgatg atgctcggcg 540
 aggctgagga gatcagagac atcgctcgcg aggttcttaa gatcttcggc gaatacagcc 600
 tcaactgactt catctggcct ttgaagtatc tcaaggttgg aaagtatgag aagaggattg 660
 atgacatctt gaacaagtgc gacctgtcg ttgaaagagt catcaagaag cgccgtgaga 720
 tcgtcagaag gagaaagaac ggagaagttg ttgaggcgga ggccagcggc gtcttcctcg 780
 acactttgct tgaattcgct gaggacgaga ccatggagat caaaattacc aaggagcaaa 840
 tcaaggcct tgtgtgcgac tttttctctg caggacaga ttccacagcg gtggcaacag 900
 agtgggcatt ggcagagctc atcaacaatc ccaagggtgt gcaaaaggct cgtgaggagg 960
 cctacagtgt tgtgggcaaa gatagactcg ttgacgaagt tgacactcaa aaccttctct 1020
 acattagggc cattgtgaag gagacattcc gaatgcaccc accactcca gtggtcaaaa 1080
 gaaagtgcac agaagagtgt gggattaatg ggtatgtgat ccagaggga gcattggttc 1140
 ttttcaatgt ttggcaagta ggaagggacc ccaataactg ggacagacca tcagaattcc 1200
 gtcccagag gttcttagaa actggtgctg aaggggaagc agggcctctt gatcttaggg 1260
 gccagcattt ccaactctc ccatttgggt ctgggaggag aatgtgccct ggtgtcaatt 1320
 tggctacttc aggaatggca acacttcttg catctcttat ccaatgcttt gacctgcaag 1380
 tgctgggccc tcaaggacaa atattgaaag gtgatgatgc caaagttagc atggaagaga 1440
 gagctggcct cacagttcca agggcacata gtctcgtttg tgttccactt gcaaggatcg 1500
 g 1501

<210> 40
 <211> 499
 <212> PRT
 <213> Trifolium repens

<400> 40

Phe Leu His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg
 1 5 10 15
 His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly
 20 25 30
 His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
 35 40 45
 Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
 50 55 60
 Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
 65 70 75 80
 Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
 85 90 95
 Arg Arg Leu Thr Tyr Asp Asn Ser Val Ala Met Val Pro Phe Gly Pro
 100 105 110
 Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
 115 120 125
 Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
 130 135 140
 Phe Leu Arg Val Met Ala Gln Ser Ala Glu Ala Gln Lys Pro Leu Asp
 145 150 155 160
 Val Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
 165 170 175
 Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
 180 185 190
 Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
 195 200 205
 Tyr Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
 210 215 220
 Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
 225 230 235 240
 Val Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Ala Ser Gly
 245 250 255
 Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu
 260 265 270
 Ile Lys Ile Thr Lys Glu Gln Ile Lys Gly Leu Val Val Asp Phe Phe
 275 280 285
 Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
 290 295 300
 Glu Leu Ile Asn Asn Pro Lys Val Leu Gln Lys Ala Arg Glu Glu Ala
 305 310 315 320
 Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
 325 330 335
 Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
 340 345 350

Figure 1 consists of 12 diagrams arranged in two rows of six. Each diagram shows a 2D lattice of particles. The top row shows the initial state with a single particle at the center. The bottom row shows the state after one time step, with the particle having moved to a new position. The diagrams are labeled with time steps from 0 to 11. The particles are represented by small circles, and the lattice is a grid of squares. The diagrams show the particle moving from the center towards the right edge of the lattice.

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:PCR primer

<400> 44
cctctcggga cggaattctg atggt

25

<210> 45
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:PCR primer

<400> 45
gcggtgcacg ggcggactct tcttc

25

<210> 46
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:PCR primer

<400> 46
cgccaatac gcaaaccgcc tctcc

25

<210> 47
<211> 1501
<212> DNA
<213> Beta vulgaris

<400> 47
tgtttctgca cttgcgtccc acacccactg caaaatcaaa agcacttcgc catctcccaa 60
acccaccaag cccaaagcct cgtcttccct tcataggaca ccttcatctc ttaaaagaca 120
aacttctcca ctacgcactc atcgacctct ccaaaaaaca tggctccctta ttctctctct 180
actttggctc catgccaaac gttgttgctt ccacaccaga attgttcaag ctcttcctcc 240
aaacgcacga ggcaacttcc ttcaacacaa ggttccaaac ctacgccata agacgcctca 300
cctatgatag ctacgtggcc atgggttcct tccgacctta ctggaagttc gtgaggaagc 360
tcatcatgaa cgaccttctc aacgccacca ctgtaaacia gttgaggcct ttgaggacct 420
aacagatccg caagttcctt aggggttatg cccaaggcgc agaggcacag aagccccttg 480
acttgaccga ggagcttctg aaatggacca acagcaccat ctccatgatg atgctcggcg 540
aggctgagga gatcagagac atcgctcgcg aggttcttaa gatctttggc gaatacagcc 600
tactgactt catctggcca ttgaagcatc tcaaggttg aaagtatgag aagaggatcg 660
acgacatctt gaacaagttc gacctgtcgc ttgaaagagt catcaagaag cgccgtgaga 720
tcgtgaggag gaaaaagaac ggagaggatg ttgagggtga ggtcagcggg gttttccttg 780
acactttgct tgaattcgct gaggatgaga ccatggagat caaaatcacc aaggaccaca 840
tcaagggctc tgttctcgac tttttctcgg caggaacaga ctccacagcg gtggcaacag 900
agtgggcatt ggcagaactc atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg 960
tctacagtgt tgtgggaaag gacagacttg tggacgaagt agacactcaa aaccttcctt 1020
acattagagc aatcgtgaag gagacattcc gcatgcaccc gccactcca gtggtcaaaa 1080
gaaagtgcac agaagagtgt gagattaatg gatatgtgat cccagaggga gcattgatc 1140
tcttcaatgt atggcaagta ggaagagacc cttaaatactg ggacagacca tcggagttcc 1200
gtcctgagag gttcctagag acaggggctg aaggggaagc aaggttctt gatcttaggg 1260
gacaacattt tcaacttctc ccatttgggt ctgggaggag aatgtgccct ggagtcaatc 1320
tggtacttcc gggaaatggca acacttcttg catctcttat tcagtgtctt gacttgcaag 1380
tgctgggtcc acaaggacag atattgaagg gtggtgacgc caaagttagc atggaagaga 1440
gagccggcct cactgttcca agggcacata gtcttgtctg tgttccactt gcaaggatcg 1500
g 1501

<210> 48
<211> 499

<212> PRT

<213> Beta vulgaris

<400> 48

Phe Leu His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg
1 5 10 15

His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly
20 25 30

His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
35 40 45

Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
50 55 60

Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
65 70 75 80

Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
85 90 95

Arg Arg Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro
100 105 110

Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
115 120 125

Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
130 135 140

Phe Leu Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp
145 150 155 160

Leu Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
165 170 175

Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
180 185 190

Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
195 200 205

His Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
210 215 220

Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
225 230 235 240

Val Arg Arg Arg Lys Asn Gly Glu Asp Val Glu Gly Glu Val Ser Gly
245 250 255

Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu
260 265 270

Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe
275 280 285

Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
290 295 300

Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val
305 310 315 320

Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
325 330 335

Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
 340 345 350
 Pro Pro Leu Pro Val Val Lys Arg Lys Cys Ile Glu Glu Cys Glu Ile
 355 360 365
 Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp
 370 375 380
 Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
 385 390 395 400
 Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Leu Leu
 405 410 415
 Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
 420 425 430
 Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu
 435 440 445
 Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
 450 455 460
 Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg
 465 470 475 480
 Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
 485 490 495

Ala Arg Ile

<210> 49
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:PCR primer

<400> 49
 gaattcgcgg ccgctctaga actagtggat

30

<210> 50
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:PCR primer

<400> 50
 gaattcgcgg ccgcgaattg ggtaccgggc

30

<210> 51
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:PCR primer

<400> 51
 gcaaacgaag acaaattggga gatgata

27

<210> 52
 <211> 1801
 <212> DNA
 <213> Glycine max

<220>
 <221> intron
 <222> (895)..(1112)

<400> 52
 ttgctggaac ttgcacttgg tttgtttgtg ttagctttgt ttctgcactt gcgtcccaca 60
 ccaagtgcaa aatcaaaagc acttcgccac ctcccaaacc ctccaagccc aaagcctcgt 120
 cttcccttca ttggccaacct tcacctctta aaagataaac ttctccacta tgcactcatc 180
 gatctctcca aaaagcatgg ccccttattc tctctctcct tcgggtccat gccaacccgtc 240
 gttgcctcca cccctgagtt gtccaagctc ttccctccaaa cccacgaggc aacttccttc 300
 aacacaagggt tccaaaacctc tgccataaga cgcctcactt acgacaactc tgtggccatg 360
 gttccattcg gaccttactg gaagttcgtg aggaagctca tcatgaacga ccttctcaac 420
 gccaccaccg tcaacaagct caggcctttg aggacccaac agatccgcaa gttccttagg 480
 gttatggccc aaagcgcaga ggcccagaag ccccttgacg tcaccgagga gcttctcaaa 540
 tggaccaaca gcaccatctc catgatgatg ctcggcgagg ctgaggagat cagagacatc 600
 gctcgcgagg ttcttaagat cttcggcgaa tacagcctca ctgacttcat ctggcctttg 660
 aagtatctca aggttggaag gtatgagaag aggattgatg acatcttgaa caagttcgac 720
 cctgtcgttg aaagggatcat caagaagcgc cgtgagatcg tcagaaggag aaagaacgga 780
 gaagttgttg agggcgaggc cagcggcgtc ttccctcgaca ctttgcttga attcgtgag 840
 gacgagacca tggagatcaa aattaccaag gagcaaatca agggccttgt tgtcgtaagt 900
 ttcttcttct tctctactt tattactttc tttcattcat catatgtatt ggcattaaat 960
 agtatactat atgagaaaat atgttacgca ctacacggtg aaagatatgt ggtgtttttt 1020
 taaaaagaga tacagaagtt gcttttatgc atgtatgtta acgtatatat actcaagtgg 1080
 aaactaatta attctcaatt ttgggtatgt aggacttttt ctctgcaggg acagattcca 1140
 cagcgggtggc aacagagtgg gcattggcag agctcatcaa caatcccagg gtgttgcaaa 1200
 aggcctcgtga ggaggtctac agtgttgttg gcaaagatag actcgttgac gaagttgaca 1260
 ctcaaaacct tccttacatt agggccattg tgaaggagac attccgaatg caccaccac 1320
 tcccagtggt caaaagaaag tgcacagaag agtgtgagat taatgggtat gtgatcccag 1380
 agggagcatt gggtcttttc aatgtttggc aagtaggaag ggaccccaaa tactgggaca 1440
 gaccatcaga attcgcgtccc gagaggttct tagaaaactg tgctgaaggg gaagcagggc 1500
 ctcttgatct taggggccag catttccaac tcctcccat tgggtctggg aggagaatgt 1560
 gccctgggtg caatttggct acttcaggaa tggcaacact tcttgcatct cttatccaat 1620
 gctttgacct gcaagtgtcg ggccctcaag gacaaatatt gaaaggtgat gatgccaaag 1680
 ttagcatgga agagagagct ggcctcacag ttccaagggc acatagtctc gtttgtgttc 1740
 caottgcaag gatcggcgtt gcatctaaac tcctttctta attaagggat ccatcatata 1800
 c 1801

<210> 53
 <211> 1900
 <212> DNA
 <213> Glycine max

<220>
 <221> intron
 <222> (947)..(1082)

<400> 53
 aattagcctc acaaaagcaa agatcaaaaca aaccaaggac gagaacacga tgttgcttga 60
 acttgcactt ggtttatttg ttttggctct gtttctgcac ttgcgtccca caccactgc 120
 aaaatcaaaa gcacttcgcc atctcccaaa cccaccaagc ccaaagcctc gtcttcctt 180
 cataggacac cttcatctct taaaagacaa acttctccac tacgcaactc tcgacctctc 240
 caaaaaacat ggtcccttat tctctctcta ctttggctcc atgccaaccg ttgttgcttc 300
 cacaccagaa ttgttcaagc tcttctcca aacgcacgag gcaacttcct tcaacacaag 360
 gttccaaacc tcagccataa gacgcctcac ctatgatagc tcagtggcca tggttccctt 420
 cggaccttac tggaagtctg tgaggaagct catcatgaac gaccttccca acgccaccac 480
 tgtaaacaaag ttgaggcctt tgaggaccac acagaccgc aagttcctta gggttatggc 540
 ccaaggcgca gaggcacaga agccccttga cttgaccgag gagcttctga aatggacca 600
 cagcaccatc tccatgatga tgctcggcga ggtgaggag atcagagaca tcgctcgca 660
 ggttcttaag atctttggcg aatacagcct cactgacttc atctggccat tgaagcatct 720
 caaggttggga aagtatgaga agaggatcga cgacatcttg aacaagttcg accctgtcgt 780

tgaaaggggtc	atcaagaagc	gccgtgagat	cgtgaggagg	agaaagaacg	gagaggttgt	840
tgaggggtgag	gtcagcgggg	ttttccttga	cacttttgctt	gaattcgctg	aggatgagac	900
catggagatc	aaaatcacca	aggaccacat	cgaggggtctt	gttgctcgta	gtttcctgct	960
tcattcattg	atcgaaatat	gcagtatttt	gttaacaaga	gatcgagaat	tgacatttat	1020
atattcatgt	ggtggcaatt	aattaacggg	acgcattctt	aatcgatatt	gtgtatgtgc	1080
aggacttttt	ctcggcagga	acagactcca	cagcgggtggc	aacagagtgg	gcattggcag	1140
aactcatcaa	caatcctaag	gtgttggaag	aggctcgta	ggaggtctac	agtgttgtgg	1200
gaaaggacag	acttggtggac	gaagttgaca	ctcaaaacct	tccttacatt	agagcaatcg	1260
tgaaggagac	attccgcatg	cacccgccac	tcccagtggt	caaaagaaag	tgacacagaag	1320
agtgtgagat	taatggatat	gtgatcccag	agggagcatt	gattctcttc	aatgtatggc	1380
aagtaggaag	agaccccaaa	tactgggaca	gaccatcgga	gttccgtcct	gagaggttcc	1440
tagagacagg	ggctgaaggg	gaagcagggc	ctcttgatct	taggggacaa	cattttcaac	1500
ttctcccatt	tgggtctggg	aggagaatgt	gccctggagt	caatctggct	acttcgggaa	1560
tggcaacact	tcttgcatct	cttattcagt	gcttcgactt	gcaagtgtctg	ggtccacaag	1620
gacagatatt	gaaggggtgt	gacgccaaag	ttagcatgga	agagagagcc	ggcctcactg	1680
ttccaagggc	acatagttct	gtctgtgttc	cacttgcaag	gatcggcggt	gcactctaac	1740
tcctttctta	attaagatca	tcgtcatcat	catcatatat	aatatttact	ttttgtgtgt	1800
tgataatcat	catttcaata	aggtctcggt	catctacttt	ttatgaagta	tataagccct	1860
tccatgcaca	ttgtatcatc	tcccatttgt	cttcgtttgc			1900

<210> 54
 <211> 1501
 <212> DNA
 <213> Lupinus albus

<400> 54						
tgtttctgca	cttgcgctccc	acacccactg	caaaatcaaa	agcacttcgc	catctcccaa	60
acccaccaag	cccaaagcct	cgtcttccct	tcataggaca	ccttcatctc	ttaaaagaca	120
aacttctcca	ctacgcactc	atcgacctct	ccaaaaaaca	tggctccctta	ttctctctct	180
actttggctc	catgccaaac	gttggtgctc	ccacaccaga	attgttcaag	ctcttccctoc	240
aaacgcagca	ggcaacttcc	ttcaacacaa	ggttccaaac	ctcagccata	agacgcctca	300
cctatgatag	ctcagtggcc	agggttccct	tcggacctta	ctggaagttc	gtgaggaagc	360
tcatcatgaa	cgaccttctt	aacgccacca	ctgtaaacaa	gttgaggcct	ttgaggaccc	420
aacagatccg	caagttcctt	agggttatgg	cccaaggcgc	agaggcacag	aagcccttg	480
acttgaccga	ggagcttctg	aaatggacca	acagcaccat	ctccatgatg	atgctcggcg	540
aggctgagga	gatcagagac	atcgctcgcg	aggttcttaa	gatctttggc	gaatacacgcc	600
tcactgactt	catctggcca	ttgaagcatc	tcaaggttgg	aaagtatgag	aagaggatcg	660
acgacatctt	gaacaagttc	gacctgtctg	ttgaaagagt	catcaagaag	cgccgtgaga	720
tcgtgaggag	gagaaagaac	ggagaggttg	ttgaggggtga	ggtcagcggg	gttctccttg	780
acactttgct	tgaattcgct	gaggatgaga	ccatggagat	caaaatcacc	aaggaccaca	840
tcaagggctc	tgttgctcgac	tttttctcgg	caggaacaga	ctccacagcg	gtggcaacag	900
agtgggcatt	ggcagaactc	atcaacaatc	ctaaggtgtt	ggaaagggct	cgtgaggagg	960
tctacagtgt	tgtgggaaag	gacagacttg	tggacgaagt	tgacactcaa	aaccttctct	1020
acattagagc	aatcgtgaag	gagacattcc	gcatgcaccc	gccactccca	gtgggtcaaaa	1080
gaaagtgcac	agaagagtgt	gagattaatg	gatatgtgat	cccagaggga	gcattgatcc	1140
tcttcaatgt	atggcaagta	ggaagagacc	ccaaatactg	ggacagacca	tcggagttcc	1200
gtcctgagag	gttccttagag	acagaggctg	aagggggaagc	aaggcctctt	gatcttaggg	1260
gacaacattt	tcaacttctc	ccatttgggt	ctgggaggag	aatgtgccct	ggagtcatcc	1320
tggctacttc	gggaatggca	acacttcttg	catctcttat	tcagtgcctt	gacttgcaag	1380
tgctgggtcc	acaaggacag	atattgaagg	gtgggtgacgc	caaagttagc	atggaagaga	1440
gagccggcct	cactgttcca	agggcacata	gtcttgtctg	tgttccactt	gcaaggatcg	1500
g						1501

<210> 55
 <211> 499
 <212> PRT
 <213> Lupinus albus

<400> 49																			
Phe	Leu	His	Leu	Arg	Pro	Thr	Pro	Thr	Ala	Lys	Ser	Lys	Ala	Leu	Arg				
1					5				10					15					
His	Leu	Pro	Asn	Pro	Pro	Ser	Pro	Lys	Pro	Arg	Leu	Pro	Phe	Ile	Gly				
			20					25						30					

His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
 35 40 45
 Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
 50 55 60
 Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
 65 70 75 80
 Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
 85 90 95
 Arg Arg Leu Thr Tyr Asp Ser Ser Val Ala Arg Val Pro Phe Gly Pro
 100 105 110
 Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
 115 120 125
 Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
 130 135 140
 Phe Leu Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp
 145 150 155 160
 Leu Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
 165 170 175
 Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
 180 185 190
 Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
 195 200 205
 His Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
 210 215 220
 Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
 225 230 235 240
 Val Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly
 245 250 255
 Val Leu Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu
 260 265 270
 Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe
 275 280 285
 Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
 290 295 300
 Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Arg Ala Arg Glu Glu Val
 305 310 315 320
 Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
 325 330 335
 Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
 340 345 350
 Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile
 355 360 365
 Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp
 370 375 380

Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
385 390 395 400

Pro Glu Arg Phe Leu Glu Thr Glu Ala Glu Gly Glu Ala Arg Pro Leu
405 410 415

Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
420 425 430

Arg Met Cys Pro Gly Val Ile Leu Ala Thr Ser Gly Met Ala Thr Leu
435 440 445

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
450 455 460

Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg
465 470 475 480

Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
485 490 495

Ala Arg Ile

<210> 56
<211> 1501
<212> DNA
<213> Medicago sativa

<400> 56
tgttttctgca cttgogtccc acacccactg caaaatcaaa agcacttcgc catctcccaa 60
acccaccaag cccaaagcct cgtcttccct tcataggaca ccttcacatc ttaaaagaca 120
aactttctcca ctacgcactc atcgacctct ccaaaaaaca tgggtccctta ttctctctct 180
acttttggtc catgccaacc gttgttgctt ccacaccaga attgttcaag ctcttccttc 240
aaacgcacga ggcaacttcc ttcaacacaa ggttccaaac ctacagccata agacgcctca 300
cctatgatag ctacgtggcc atggctccct tcggacctta ctggaagttc gtgaggaagc 360
tcatcatgaa cgaccttctc aacgccacca ctgtaaaciaa gttgaggcct ttgaggaccc 420
aacagatccg caagttcctt agggttatgg cccaaggcgc agaggcacag aagccccttg 480
acttgaccga ggagcttctg aaatggacca acagaccac ctccatgatg atgctcggcg 540
aggctgagga gatcagagac atcgcccgcg aggttcttaa gatctttggc gaatacagcc 600
tactgactt catccggcca ttgaagcatc tcaagggttg aaagtatgag aagaggatcg 660
acgacatctt gaacaagttc gacctgtctg ttgaaagagt catcaagaag cgccgtgaga 720
tcgtgaggag gagaaagaac ggagaggttg ttgaggggtg ggtcagcggg gttttccttg 780
acactttgct tgaattcgct gaggtgaga ccacggagat caaaatcacc aaggaccaca 840
tcaagggtct tgttgctgac tttttctcgg caggaacaga ctccacagcg gtggcaacag 900
agtgggcatt ggcagaactc atcaacaatc ctaagggtgt ggaaaaggct cgtgaggagg 960
tctacagtgt tgtgggaaaag gacagacttg tggacgaagt tgacactcaa aaccttccct 1020
acattagagc aatcgtgaag gagacattcc gcatgcaccc gccactccca gtggtcaaaa 1080
gaaagtgcac agaagagtgt gagattaatg gatattgat cccagagga gcatgtattc 1140
tcttcaatgt atggcaagta ggaagagact ccaaatactg ggacagacca tcggagttcc 1200
gtcctgagag gttcctagag acaggggctg aaggggaagc aaggcctctt gatcttaggg 1260
gacaacattt tcaacttctc ccatttgggt ctgggaggag aatgtgccct ggagtcaatc 1320
tggtacttcc gggaatggca acacttcttg catctcttat tcagtgtttt gacttgcaag 1380
tgctgggtcc acaaggacag atattgaagg gtggtgacgc caaagttagc atggaagaga 1440
gggcggcct cactgttcca agggcacata gtcttgtctg tgttcactt gcaaggatcg 1500
g 1501

<210> 57
<211> 499
<212> PRT
<213> Medicago sativa

<400> 57
Phe Leu His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg
1 5 10 15

His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly
 20 25 30
 His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
 35 40 45
 Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
 50 55 60
 Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
 65 70 75 80
 Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
 85 90 95
 Arg Arg Leu Thr Tyr Asp Ser Ser Val Ala Met Ala Pro Phe Gly Pro
 100 105 110
 Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
 115 120 125
 Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
 130 135 140
 Phe Leu Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp
 145 150 155 160
 Leu Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Thr Ser Met Met
 165 170 175
 Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
 180 185 190
 Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Arg Pro Leu Lys
 195 200 205
 His Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
 210 215 220
 Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
 225 230 235 240
 Val Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly
 245 250 255
 Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu
 260 265 270
 Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe
 275 280 285
 Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
 290 295 300
 Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val
 305 310 315 320
 Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
 325 330 335
 Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
 340 345 350
 Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile
 355 360 365

Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp
 370 375 380

Gln Val Gly Arg Asp Ser Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
 385 390 395 400

Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu
 405 410 415

Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
 420 425 430

Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu
 435 440 445

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
 450 455 460

Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg
 465 470 475 480

Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
 485 490 495

Ala Arg Ile

<210> 58
 <211> 1501
 <212> DNA
 <213> Medicago sativa

<400> 58
 tgtttctgca cttgcgtccc acacccactg caaaatcaaa agcacttcgc catctcccaa 60
 acccaccaag cccaaagcct cgtcttccct tcataggaca ccttcatctc ttaaaagaca 120
 aacttctcca ctacgcactc atcgacctct ccaaaaaaca tggcccctta ttctctctct 180
 actttggctc catgccaaacc gttgttgccct ccacaccaga attgttcaag ctcttcctcc 240
 aaacgcacga ggcaacttcc ttcaacacaa gggtccaaac ctacagccata agacgcctca 300
 cctatgatag ctcaagtggc atgggtccct tgggaacctta ctggaagttc gtgagggaagc 360
 tcatcatgaa cgaccttctc aacgccacca ctgtaaaciaa gttgaggcct ttgaggaccc 420
 aacagatccg caagctcctt aggggttatgg cccaaggcgc agaggcacag aagccccttg 480
 acttgaccga ggagcttctg aaatggacca acagcaccat ctccatgatg atgctcggcg 540
 aggtgagga gatcagagac atcgctcgcg aggttcttaa gatctttggc gaatacagcc 600
 tcaactgact catctggcca ttgaagcatc tcaagggttg aaagtatgag aagaggatcg 660
 acgacatctt gaacaagttc gaccctgtcg ttgaaagagt catcaagaag cgcctgaga 720
 tcgtgaggag gagaaagaac ggagagggtta ttgagggtga ggtcagcggg gttttccttg 780
 acactttgct tgaattcgct gaggatgaga ccacggagat caaaatcacc aaggaccaca 840
 tcaagggtct tgttgctcgac tttttctcgg caggaaacaga ctccacagcg gtggcaacag 900
 agtgggcatt ggcagaactc atcaacaatc ctaagggtgtt ggagaaggct cgtgaggagg 960
 tctacagtgt tgtgggaaag gacagacttg tggacgaagt tgacactcaa aaccttctct 1020
 acattagagc aatcgtgaag gagacattcc gcatgcaccc gccactccca gtggtcaaaa 1080
 gaaagtgcac agaagagtgt gagattaatg gatattgatg cccagaggga gcattgatcc 1140
 tcttcaatgt atggcaagta ggaagagacc ccaaatactg ggacagacca tcggagttcc 1200
 gtcttgagag gttccttagag acaggggctg aaggggaagc aaggcctctt gatcttaggg 1260
 gacaacattt tcaacttctc ccatttgggt ctgggaggag aatgtgccct ggagtcaatc 1320
 tggctacttc gggaatggca acacttcttg catctcttat tcagtgtttt gacttgcaag 1380
 tgctgggtcc acaaggacag atattgaagg gtggtgacgc caaagttagc atggaagaga 1440
 gggccggcct cactgttcca agggcacata gtcttgctct tgttccactt gcaaggatcg 1500
 g 1501

<210> 59
 <211> 499
 <212> PRT
 <213> Medicago sativa

<400> 59

Phe Leu His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg
 1 5 10 15
 His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly
 20 25 30
 His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
 35 40 45
 Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
 50 55 60
 Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
 65 70 75 80
 Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
 85 90 95
 Arg Arg Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro
 100 105 110
 Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
 115 120 125
 Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
 130 135 140
 Leu Leu Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp
 145 150 155 160
 Leu Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
 165 170 175
 Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
 180 185 190
 Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
 195 200 205
 His Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
 210 215 220
 Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
 225 230 235 240
 Val Arg Arg Arg Lys Asn Gly Glu Val Ile Glu Gly Glu Val Ser Gly
 245 250 255
 Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu
 260 265 270
 Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe
 275 280 285
 Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
 290 295 300
 Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val
 305 310 315 320
 Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
 325 330 335
 Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
 340 345 350

Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile
355 360 365

Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp
370 375 380

Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
385 390 395 400

Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu
405 410 415

Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
420 425 430

Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu
435 440 445

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
450 455 460

Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg
465 470 475 480

Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
485 490 495

Ala Arg Ile

<210> 60
<211> 1497
<212> DNA
<213> Beta vulgaris

<400> 60
tctgcacttg cgtccacac ccaactgcaaa atcaaaagca ctctcgccatc tcccaaacc 60
accaagccca aagcctcgtc ttcccttcat aggacacctt catctcttaa aagacaaact 120
tctccactac gcaactcatcg acctctccaa aaaacatggt cccttattct ctactactt 180
tggtcccatg ccaaccggttg ttgcctccac accagaattg ttcaagctct tcctccaaac 240
gaacgaggca acttccttca acacaagggt ccaaacctca gccataagac gcctcaccta 300
tgatagctca gtggccatgg ttcccttcgg accttactgg aagttcgtga ggaagctcat 360
catgaacgac cttctcaacg ccaccactgt aaacaagttg aggcctttga ggaccaaca 420
gatccgcaag ttctttaggg ctatggccca aggcgcagag gcacggaagc cccttgactt 480
gaccgaggag cttctgaaat gggccaacag caccatctcc atgatgatgc tcggcgaggc 540
tgaggagatc agagacatcg ctgcgaggtt tcttaagatc tttggcgaat acagcctcac 600
tgacttcatc tggccattga agcatctcaa ggttggaag tatgagaaga ggatcgacga 660
catcttgaac aagttcgacc ctgtcggttg aagagtcac aagaagcgcc gtgagatcgt 720
gaggaggaga aagaacggag aggttggtga ggggtgaggtc agcgggggtt tccttgacac 780
tttgcttgaa ttcgctgagg atgagaccat ggagatcaaa atcaccaagg accacaccaa 840
gggtcttggt gtcgacttct tctcggcagg aacagactcc acagcgggtg caacagagtg 900
ggcattggca gaactcatca acaatcctaa cgaagttgac actcaaaacc ttccttacat 960
cagtgttggt ggaaaggaca gacttggtga gctcctgac actcaaaacc ttccttacat 1020
tagagcaatc gtgaaggaga cattccgcat gcaccgcca ctcccagtg tcaaaagaaa 1080
gtgcacagaa gagtgtgaga ttaatggata tgtgatccca gagggagcat tgattccctt 1140
caatgtatgg caagtaggaa gagaccccaa atactgggac agaccatcgg agttccgtcc 1200
tgagagggtc cttagagacg gggctgaagg ggaagcaagg cctcttgatc ttaggggaca 1260
acattttcaa cttctcccat ttgggtctgg tgccctggag tcaatctggc 1320
tacttcggga acggcaacac ttcttgcatc tcttattcag tgctttgact tgcaagtgtc 1380
gggtccacag ggacagatat tgaagggtgg tgacgcaaaa gttagcatgg aagagagagc 1440
cggcctcact gttccaaggg cacatagtct tgtctgtgtt ccacttgcaa ggatcgg 1497

<210> 61
<211> 498

<212> PRT

<213> Beta vulgaris

<400> 61

Leu His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg His
 1 5 10 15
 Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His
 20 25 30
 Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu
 35 40 45
 Ser Lys Lys His Gly Pro Leu Phe Ser His Tyr Phe Gly Ser Met Pro
 50 55 60
 Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr
 65 70 75 80
 Asn Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg
 85 90 95
 Arg Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr
 100 105 110
 Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr
 115 120 125
 Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe
 130 135 140
 Leu Arg Ala Met Ala Gln Gly Ala Glu Ala Arg Lys Pro Leu Asp Leu
 145 150 155 160
 Thr Glu Glu Leu Leu Lys Trp Ala Asn Ser Thr Ile Ser Met Met Met
 165 170 175
 Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys
 180 185 190
 Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His
 195 200 205
 Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys
 210 215 220
 Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val
 225 230 235 240
 Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val
 245 250 255
 Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile
 260 265 270
 Lys Ile Thr Lys Asp His Thr Lys Gly Leu Val Val Asp Phe Phe Ser
 275 280 285
 Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu
 290 295 300
 Leu Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr
 305 310 315 320
 Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn
 325 330 335

Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro
 340 345 350
 Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn
 355 360 365
 Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Pro Phe Asn Val Trp Gln
 370 375 380
 Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro
 385 390 395 400
 Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp
 405 410 415
 Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg
 420 425 430
 Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Thr Ala Thr Leu Leu
 435 440 445
 Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly
 450 455 460
 Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala
 465 470 475 480
 Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala
 485 490 495

Arg Ile

<210> 62
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:PCR PRIMER

<400> 62
 gttaccatgg ctgctgctat tg

22

<210> 63
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:PCR PRIMER

<400> 63
 ttaaacgtaa aatgaaacaa gagg

24

<210> 64
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:PCR PRIMER

<400> 64
 gacacttcga cactgctgct gcttat

26

<210> 65
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:PCR PRIMER

<400> 65
 tctcaaaactc acctgggcta tggat

25

<210> 66
 <211> 521
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Consensus

<220>
 <221> UNSURE
 <222> (10)

<220>
 <221> UNSURE
 <222> (16)

<220>
 <221> UNSURE
 <222> (23)

<220>
 <221> UNSURE
 <222> (25)

<220>
 <221> UNSURE
 <222> (39)

<220>
 <221> UNSURE
 <222> (48)

<220>
 <221> UNSURE
 <222> (60)

<220>
 <221> UNSURE
 <222> (73)

<220>
 <221> UNSURE
 <222> (74)

<220>
 <221> UNSURE
 <222> (95)

<220>
 <221> UNSURE
 <222> (102)

<220>
<221> UNSURE
<222> (110)

<220>
<221> UNSURE
<222> (112)

<220>
<221> UNSURE
<222> (117)

<220>
<221> UNSURE
<222> (118)

<220>
<221> UNSURE
<222> (121)

<220>
<221> UNSURE
<222> (122)

<220>
<221> UNSURE
<222> (124)

<220>
<221> UNSURE
<222> (129)

<220>
<221> UNSURE
<222> (147)

<220>
<221> UNSURE
<222> (159)

<220>
<221> UNSURE
<222> (162)

<220>
<221> UNSURE
<222> (166)

<220>
<221> UNSURE
<222> (170)

<220>
<221> UNSURE
<222> (175)

<220>
<221> UNSURE
<222> (183)

<220>
<221> UNSURE
<222> (187)

<220>
<221> UNSURE
<222> (191)

<220>
<221> UNSURE
<222> (209)

<220>
<221> UNSURE
<222> (219)

<220>
<221> UNSURE
<222> (223)

<220>
<221> UNSURE
<222> (253)

<220>
<221> UNSURE
<222> (259)

<220>
<221> UNSURE
<222> (263)

<220>
<221> UNSURE
<222> (264)

<220>
<221> UNSURE
<222> (268)

<220>
<221> UNSURE
<222> (272)

<220>
<221> UNSURE
<222> (285)

<220>
<221> UNSURE
<222> (293)

<220>
<221> UNSURE
<222> (294)

<220>
<221> UNSURE
<222> (301)

<220>
<221> UNSURE
<222> (306)

<220>
<221> UNSURE
<222> (311)

<220>
<221> UNSURE
<222> (312)

<220>
<221> UNSURE
<222> (325)

<220>
<221> UNSURE
<222> (328)

<220>
<221> UNSURE
<222> (334)

<220>
<221> UNSURE
<222> (342)

<220>
<221> UNSURE
<222> (377)

<220>
<221> UNSURE
<222> (381)

<220>
<221> UNSURE
<222> (385)

<220>
<221> UNSURE
<222> (387)

<220>
<221> UNSURE
<222> (393)

<220>
<221> UNSURE
<222> (394)

<220>
<221> UNSURE
<222> (402)

<220>
<221> UNSURE
<222> (404)

<220>
<221> UNSURE
<222> (413)

<220>
<221> UNSURE
<222> (422)

<220>
<221> UNSURE
<222> (428)

<220>
 <221> UNSURE
 <222> (429)

<220>
 <221> UNSURE
 <222> (435)

<220>
 <221> UNSURE
 <222> (447)

<220>
 <221> UNSURE
 <222> (453)

<220>
 <221> UNSURE
 <222> (459)

<220>
 <221> UNSURE
 <222> (485)

<400> 66
 Met Leu Leu Glu Leu Ala Leu Gly Leu Xaa Val Leu Ala Leu Phe Xaa
 1 5 10 15
 His Leu Arg Pro Thr Pro Xaa Ala Xaa Ser Lys Ala Leu Arg His Leu
 20 25 30
 Pro Asn Pro Pro Ser Pro Xaa Pro Arg Leu Pro Phe Ile Gly His Xaa
 35 40 45
 His Leu Leu Lys Asp Lys Leu His Tyr Ala Xaa Ile Asp Leu Ser
 50 55 60
 Lys Lys His Gly Pro Leu Phe Ser Xaa Xaa Phe Gly Ser Met Pro Thr
 65 70 75 80
 Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Xaa Xaa
 85 90 95
 Glu Ala Thr Ser Phe Xaa Thr Arg Phe Gln Thr Ser Ala Xaa Arg Xaa
 100 105 110
 Leu Thr Tyr Asp Xaa Xaa Val Ala Xaa Xaa Pro Xaa Gly Pro Tyr Trp
 115 120 125
 Xaa Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
 130 135 140
 Val Asn Xaa Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Xaa Leu
 145 150 155 160
 Arg Xaa Met Ala Gln Xaa Ala Glu Ala Xaa Lys Pro Leu Asp Xaa Thr
 165 170 175
 Glu Glu Leu Leu Lys Trp Xaa Asn Ser Thr Xaa Ser Met Met Xaa Leu
 180 185 190
 Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
 195 200 205
 Xaa Gly Glu Tyr Ser Leu Thr Asp Phe Ile Xaa Pro Leu Lys Xaa Leu
 210 215 220

Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
 225 230 235 240
 Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Xaa Ile Val Arg
 245 250 255
 Arg Arg Xaa Asn Gly Glu Xaa Xaa Glu Gly Glu Xaa Ser Gly Val Xaa
 260 265 270
 Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Xaa Glu Ile Lys
 275 280 285
 Ile Thr Lys Xaa Xaa Ile Lys Gly Leu Val Val Asp Xaa Phe Ser Ala
 290 295 300
 Gly Xaa Asp Ser Thr Ala Xaa Xaa Thr Glu Trp Ala Leu Ala Glu Leu
 305 310 315 320
 Ile Asn Asn Pro Xaa Val Leu Xaa Xaa Ala Arg Glu Glu Xaa Tyr Ser
 325 330 335
 Val Val Gly Lys Asp Xaa Leu Val Asp Glu Val Asp Thr Gln Asn Leu
 340 345 350
 Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
 355 360 365
 Leu Pro Val Val Lys Arg Lys Cys Xaa Glu Glu Cys Xaa Ile Asn Gly
 370 375 380
 Xaa Val Xaa Pro Glu Gly Ala Leu Xaa Xaa Phe Asn Val Trp Gln Val
 385 390 395 400
 Gly Xaa Asp Xaa Lys Tyr Trp Asp Arg Pro Ser Glu Xaa Arg Pro Glu
 405 410 415
 Arg Phe Leu Glu Thr Xaa Ala Glu Gly Glu Ala Xaa Xaa Leu Asp Leu
 420 425 430
 Arg Gly Xaa His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Xaa Met
 435 440 445
 Cys Pro Gly Val Xaa Leu Ala Thr Ser Gly Xaa Ala Thr Leu Leu Ala
 450 455 460
 Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
 465 470 475 480
 Ile Leu Lys Gly Xaa Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
 485 490 495
 Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
 500 505 510
 Ile Gly Val Ala Ser Lys Leu Leu Ser
 515 520